2-B
PORTAL SCREENING
LEVEL 1 AND 2 DOCUMENTATION

FINAL
ENVIRONMENTAL
IMPACT STATEMENT

Brightwater
Regional Wastewater
Treatment System

APPENDICES

King County Brightwater TREATMENT SYSTEM

Final

Appendix 2-B
Portal Screening Level 1 and 2 Documentation

October 2003

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Introduction

King County has prepared a Draft Environmental Impact Statement (Draft EIS) and Final Environmental Impact Statement (Final EIS) on the Brightwater Regional Wastewater Treatment System. The Final EIS is intended to provide decision-makers, regulatory agencies and the public with information regarding the probable significant adverse impacts of the Brightwater proposal and identify alternatives and reasonable mitigation measures.

King County Executive Ron Sims has identified a preferred alternative, which is outlined in the Final EIS. This preferred alternative is for public information only, and is not intended in any way to prejudge the County's final decision, which will be made following the issuance of the Final EIS with accompanying technical appendices, comments on the Draft EIS and responses from King County, and additional supporting information. After issuance of the Final EIS, the King County Executive will select final locations for a treatment plant, marine outfall and associated conveyances.

The County Executive authorized the preparation of a set of Technical Reports, in support of the Final EIS. These reports represent a substantial volume of additional investigation on the identified Brightwater alternatives, as appropriate, to identify probable significant adverse environmental impacts as required by the State Environmental Policy Act (SEPA). The collection of pertinent information and evaluation of impacts and mitigation measures on the Brightwater proposal is an ongoing process. The Final EIS incorporates this updated information and additional analysis of the probable significant adverse environmental impacts of the Brightwater alternatives, along with identification of reasonable mitigation measures. Additional evaluation will continue as part of meeting federal, state and local permitting requirements.

Thus, the readers of this Technical Report should take into account the preliminary nature of the data contained herein, as well as the fact that new information relating to Brightwater may become available as the permit process gets underway. It is released at this time as part of King County's commitment to share information with the public as it is being developed.

Purpose

The purpose of this report is to document the methods used for portal site screening and summarize the results of the Level 1 and Level 2 portal screening processes. The Level 1 and 2 portal screening processes were used to identify and evaluate suitable candidate sites within the portal siting areas, 72-acre circles, that were identified in the Brightwater Draft Environmental Impact Statement (Draft EIS). Portal siting areas were identified in the Draft EIS and were selected based on the engineering requirements for the design and construction of conveyance.

This report provides:

- Project background on the Brightwater wastewater system
- Methodology used in the portal screening process
- Factors used to evaluate the candidate sites within the portal siting areas and the reason for inclusion of these factors
- Evaluation data and summary results for each candidate site

Project Background

In November 1999 the King County Council adopted Ordinance 13680, known as 'the Regional Wastewater Services Plan (RWSP)', which directs development of a new regional wastewater treatment system in north King County or south Snohomish County by 2010. The RWSP addresses continued growth throughout King County and Snohomish County and the corresponding demand for additional wastewater infrastructure. King County proposes to construct this new wastewater system, named Brightwater. The Brightwater System will include a treatment plant to provide secondary treatment of wastewater, pipelines to convey wastewater to and from the plant (conveyance), and a marine outfall to discharge the treated wastewater to Puget Sound.

Following adoption of the RWSP in late 1999, King County began developing alternatives for the Brightwater Project using a three-phase approach. The goal of Phase I was to use King County Council-adopted policy siting criteria to identify a small group of potential sites for the treatment plant from a pool of over 100 potential sites. King County completed Phase I in May 2001, having identified six candidate sites for the treatment plants and eight candidate outfall zones in Puget Sound. On May 14, 2001, the King County Council accepted the candidate sites for the treatment plant and outfall zones for further evaluation, as well as a set of refined policy criteria for use in narrowing the number of sites under Phase II.

Phase II considered complete "candidate systems" for each of the six candidate sites; each system included a conceptual treatment plant layout, two construction options for the conveyance pipes serving the plant, and two options for where the marine outfall would be located. One conveyance construction option involved burying the pipes at relatively shallow depths using surface trenching, and the other involved tunneling the pipes deep underground.

On September 17, 2001, the King County Executive transmitted a recommendation to the King County Council to advance two alternative treatment plant sites to Phase III for environmental review in an Environmental Impact Statement (EIS). Three system alternatives based on those sites are evaluated in the Draft EIS. One system alternative is based on siting the Brightwater Treatment Plant at the Unocal site in Edmonds. Two system alternatives are based on siting the Brightwater Treatment Plant at the Route 9 site in unincorporated Snohomish County just north of the City of Woodinville.

Based on the results of the Phase III evaluation, three action alternatives and a no action alternative were identified and evaluated in the Draft EIS. The Draft EIS was released on November 6, 2002 for public comment. The action alternatives were:

- **Route 9–195th Street System (Preferred Alternative)** - A treatment plant at the Route 9 site with conveyance pipelines in deep tunnels primarily under 195th and 205th Streets and a marine outfall off Point Wells to Outfall Zone 7S.
- **Route 9–228th Street System** - A treatment plant at the Route 9 site with conveyance pipelines in deep tunnels primarily under 228th Street SE and a marine outfall off Point Wells to Outfall Zone 7S.
- **Unocal System** - A treatment plant at the Unocal site with an influent pipeline to carry untreated wastewater from King County's existing pipelines near SR-405 in

Bothell through Kenmore and Lake Forest Park to Edmonds and a marine outfall located off Pt. Edwards in Outfall Zone 6.

The King County Executive identified the Route 9–195th Street System as the preferred alternative because of its relative efficiencies and flexibility over the others.

Relationship to Draft EIS

The conveyance facilities for each of the three system alternatives in the Draft EIS consisted of 1000-foot wide corridors with portal siting areas identified approximately every 10,000 feet. A total of 22 portal siting areas were identified along the three alternative conveyance corridors. Portal siting areas consisted of 2,000-foot diameter (72-acre) areas within which one to two acres would be selected for portal construction. Portals would be designed as an access point for the tunnel boring equipment to be launched and received during the construction of the tunnel.

Subsequent to the Draft EIS, an identification and screening process was applied to the 72-acre portal siting areas to identify one to two acre candidate sites for portal construction. The Level 1 screening consisted of the identification of sensitive areas in the 72-acre portal siting area. This information was used so that candidate sites, which would avoid or minimize impacts to sensitive areas, could be identified. Multiple candidate sites were evaluated within each portal siting area. Sites containing wetlands, sensitive habitats, and other historical and cultural resources were avoided where possible. Candidate sites were evaluated based on criteria from four categories: engineering, community-environment, land acquisition, and financial. These criteria were used to determine the relative suitability of the candidate sites and resulted in two to four candidates per portal siting area that will be shown in the final EIS.

Level 3 portal screening will be used to recommend a preferred candidate site within each portal siting area. This screening, which will also be criteria based, will be performed during pre-design, with the recommended site determined after the Final Environmental Impact Statement (Final EIS) is issued.

Summary of Portal Screening Process

A total of 22 portal siting areas, each encompassing 72 acres, were identified along the three conveyance corridors that were evaluated in the Draft EIS. Portals provide access for launching and retrieving the tunnel boring equipment and installing pipes. Multiple candidate sites within each portal siting area were identified in order to minimize disturbance to the community and environment within the portal siting areas. The candidate sites were then evaluated to determine if they were suitable to carry forward. The evaluation occurred as part of the screening process, which consisted of two levels. The Level 1 and Level 2 portal screening is discussed in more detail below.

Level 1 Portal Screening – Sensitive Area Identification

The Level 1 portal screening was performed for the 22 portal siting areas identified in the Draft EIS. In the Level 1 portal screening, sensitive areas were identified so that they could be avoided if possible. The sensitive areas included:

- Wetlands and streams
- Critical habitat including high quality upland vegetation
- Occupied cemeteries
- Known cultural and historical resources

Geographic Information System (GIS) databases were used to identify sensitive areas within each portal siting area. The wetlands and streams were identified from existing GIS databases and did not include the classification of these natural features. It was the goal, at this stage of the screening process, to avoid or minimize impacts to sensitive areas consistent with environmental regulations regardless of the classification. The results of the Level 1 Portal Screening – Sensitive Area Identification are found on maps in Attachment A.

Level 2 Portal Screening – Candidate Site Evaluation

In the Level 2 portal screening, multiple candidate sites were identified within each portal siting area from the areas remaining after Level 1 identification of sensitive areas. These candidate sites were identified based on site visits and known or available information. The priority for candidate site selection was to look for sites that were publicly owned or undeveloped or under-utilized private property. If there were no undeveloped or under-developed lands, then developed property was evaluated. Among the developed properties, publicly owned sites, commercial/industrial, and residential sites were considered. A minimum site size of 1 to 2 acres was set to allow adequate area for equipment access, staging, and operation. The Level 2 Screening Process section describes this in more detail.

Level 3 Portal Screening – Final Recommended Portal Site

The recommended portal site for acquisition and construction will be selected in the Level 3 portal screening. Engineering, environmental, community, finance, land acquisition and other data, as well as input from jurisdictions will be used in this final step of screening. The Level 3 screening process will be performed during engineering pre-design with the recommended site determined concurrently with the Final EIS.

Level 2 Screening Process

Candidate Site Identification

Candidate sites were identified and evaluated in the Level 2 screening process. The Level 2 screening process used information gathered in the Level 1 screening and applied further analysis to identify candidate sites within each portal siting area. A workshop was held on December 19, 2002, to identify candidate sites (see meeting minutes in Attachment B). Land zoning maps, sensitive areas maps and aerial photos with the Level 1 screening information overlaid on them were used. Vacant or under-developed parcels or under-utilized public property were given first priority as candidate sites. If the vacant parcel was not large enough by itself to meet the 2-acre size criterion, then additional developed parcels adjacent to the vacant parcel were included to comprise an adequately-sized candidate site. Larger parcels were identified, when possible, to minimize the number of property owners that would be impacted. When two or more adjacent parcels had the same owner, they were preferred over similar parcels with different owners to simplify the acquisition process.

In some portal siting areas, only developed or forested, steep-sloped sites or sites with wetlands were available. In those areas, the focus was on the largest parcels in order to minimize the number of property owners impacted. In some cases, low-quality forested areas were also included in the candidate site, to minimize impacts to developed properties.

Approximately two to seven candidate sites per portal siting area were initially identified in the December 2002 Workshop. Subsequent to the December 2002 Workshop, field visits were performed to verify land use information and confirm the suitability of the candidate sites.

Based on the field visits, some of the sites were modified in size, some vacant sites were found to have been developed and were dropped from consideration, and some new sites were added (See Attachment B - meeting minutes from the January 7, 2003 field work coordination meeting) through further analysis.

Information regarding the evaluated sites' size, current use and jurisdiction is contained in Attachment C. Table 1 lists the portal siting areas and the candidate sites initially evaluated in the Level 2 screening.

A second workshop was held on January 15, 2003 to review the initial results of the Level 2 screening (See Attachment B - meeting minutes Portal Screening Workshop). Several candidate sites were dropped from further consideration based on the evaluation and their relative ranking among candidate sites within a portal siting area. King County plans to carry an average of two to three candidate sites for each portal siting area into the Level 3 screening.

Table 1. Candidate Sites Initially Included in the Level 2 Screening Process

Route 9 Influent Corridor		Route 9 Effluent 195th Corridor		Route 9 Effluent 228th Corridor		Unocal Influent Corridor	
Portal Area	*Site*	*Portal Area*	*Site*	*Portal Area*	*Site*	*Portal Area*	*Site*
10	I10-A	19	E19-A	19	E19-A	3	I3-D
	I10-B		E19-B		E19-B		I3-E
	I10-C		E19-C		E19-C		I3-F
	I10-D		E19-D		E19-D	5	I5-A
	I10-E		E19-E		E19-E		I5-B
11	I11-A	23	E23-A	22	E22-C		I5-C
	I11-B		E23-B		E22-D		I5-D
	I11-C		E23-D		E22-E		I5-E
34	I34-A/B		E23-F		E22-F		I5-G
	I34-F	27	E27-A	24	E24-A		I5-X
41	I41-A		E27-B		E24-B	7	I7-A
	I41-B		E27-C		E24-C		I7-B
	I41-C	7	E7-A	26	E26-A		I7-C
	I41-D		E7-B		E26-B	10	I10-A
	I41-E		E7-C		E26-C		I10-B
	I41-X	45	E45-A		E26-D		I10-C
44	E44-A		E45-B	30	E30-A		I10-D
	E44-B		E45-C		E30-B		I10-E
	E44-C		E45-D		E30-C	11	I11-A
	E44-D	44	E44-A	33	E33-A		I11-B
	E44-E		E44-B		E33-B		I11-C
			E44-C		E33-C	12	I12-E
			E44-D		E33-D		I12-C
			E44-E	37	E37-A		
		41	E41-A		E37-B		
			E41-B		E37-C	13	I13-A
			E41-C		E37-D		I13-B
			E41-D	39	E39-A		I13-C
			E41-E		E39-B	14	I14-A
			E41-X		E39-C		I14-B
		5	I5-A		E39-D		I14-C
			I5-B		E39-E		I14-D
			I5-C				
			I5-D				
			I5-E				
			I5-G				
			I5-X				

Note: Attachment C provides more detailed information on the candidate sites.

Evaluation Methodology

A list of 22 evaluation factors were developed based on program criteria and other feasibility considerations. The factors were used to test the relative suitability of candidate sites and were based on measurable physical properties. Candidate sites were evaluated using the factors with a tiered approach. Sixteen of the factors were given priority in determining the relative ranking of candidate sites because they were found to be the most distinguishing factors in the screening process. These factors encompass broad categories of engineering, environmental/community, land acquisition and financial.

The remaining six factors were considered to be secondary and the study team determined that these would be deferred to the Level 3 screening. These secondary factors provided little distinction between candidate sites given the current level of available information. More specific site investigations can be performed during the Level 3 screening. These six secondary factors were excluded from the relative rankings used for Level 2 screening.

For each factor, an evaluation question was posed. For example, stream impacts were identified as an evaluation factor with the following question: "Would the construction of a portal disrupt natural surface waters (i.e., streams, lakes, Puget Sound) or their buffer?" To establish a systematic response that would allow comparison among the candidate sites, a relative rating scale was used for each evaluation question. Some scales are quantitative based on specific measurement such as distance from tunnel centerline; however, most of the scales are qualitative involving best professional judgments. For example, in relation to the above stated question, the scale would be: High – It is likely that the construction of the portal would impact a natural surface water, Medium – It is possible that the construction of the portal would impact a natural surface water, Low – It is unlikely that the construction of the portal would impact a natural surface water, No – the construction of the portal would not impact natural surface water. In this case, the assessment was based on the proximity of the surface water to the candidate site, and the potential for loss of vegetation, dewatering impacts, erosion, and other impacts that could directly or indirectly occur.

Some scales were used to assess potential constraints or disadvantages, while others assessed potential opportunities or benefits. With respect to a scale that measured a potential constraint, a 'high' would indicate a highly constrained candidate site; whereas on a scale that measured potential benefits, a 'high' would indicate strong potential for a benefit associated with the candidate site. Attachment D lists and describes the Level 2 Portal Screening evaluation factors.

Each candidate site was subjected to the16 evaluation factors, forming a matrix. The specific questions, scales, and ratings used to evaluate each candidate site are compiled into Evaluation Matrix Tables contained in Attachment E. After completion of the evaluation matrix, the ratings were loaded into a numerical model used to compile the overall relative performance of candidate sites and graph their relative suitability.

Criterium Decision Plus

Commercially-available software, known as Criterium Decision Plus, was used to organize the performance criteria, manage the large volume of data, and produce an analytical perspective of which candidate sites perform the best within each of the portal siting areas.

The model was designed to establish the relative contribution of factors from technical (engineering), environmental/community, land acquisition, and financial evaluations. The model was a tabulation tool.

The factors were assigned weights by the project screening team to reflect the relative importance of the broad categories of engineering, environmental/community, land acquisition, and financial. These weights were used in the model and assisted in understanding the sensitivity of the results to the weights and relative number of factors. Minimizing impacts to sensitive environmental areas and natural resources was given high priority in Level 2; however, it is critical to point out that the purpose of Level 1 screening was to identify candidate sites, which avoid or minimize sensitive areas.

Impacts to the community during construction and land acquisition were considered the most important factors in this level of screening. A weight of 36.4 percent was assigned to both environmental/community and land acquisition categories. Engineering was assigned a weight of 22.7 percent, and the financial factor was given a weight of 4.5 percent. All the factors under each category were given equal weight to add up to the assigned total weight. For example, under the engineering category, each of the three criteria was assigned a weight of 7.6 percent. The sum of these three weights equals the total weight of that category (7.6 percent times three equals 22.7 percent with rounding). Table 2 summarizes the weighting on the following page.

A score was generated after running the model for each of the candidate sites. The score is the cumulative representation of how well the candidate site performed relative to the performance criteria. If a candidate site performs perfectly on all criteria, its decision score would be 1.00.

Table 2. Weighting Factors

Category	Weighting	Factor Weighting
Engineering	22.7	3 @ 7.6
Environment/Community	36.4	8 @ 4.55
Land Acquisition	36.4	4 @ 9.1
Financial	4.5	1 @ 4.5
Total	100.0	

Evaluation Factors

Key factors

The project team determined that 16 factors were key in evaluating the performance of the candidate sites. The key factors were found to be the most distinguishing factors in the screening process and allowed the team to determine the differences between candidate sites. These are summarized below and were used to distinguish the relative rankings among candidate sites. These factors reflect a broad range of public concerns, technical engineering constraints, environmental impacts, and cost.

ENGINEERING FACTORS

Proximity to tunnel centerline (ENGR-Constr1)

This factor was evaluated with the question, "What is the distance from the candidate site to the projected centerline of the tunnel right-of-way (ROW)?"

The distance between the tunnel centerline and the candidate site is important in terms of cost and number of private easements needed for the tunnel. The further the candidate site is from the tunnel centerline, typically the greater the cost and number of private easements needed.

A quantitative scale based on the distance from the projected tunnel centerline to the center of the candidate site was used to evaluate this factor.

Landslide Potential or Steep Slopes (ENGR-Geo1)

This factor was evaluated with the question, "What is the extent of landslide potential or slopes greater than 30 degrees at the candidate site?"

This question addressed the constraint imposed by landslide potential or the slope of the candidate site. Land areas with steep slopes or areas of high landslide potential would require substantial site preparation, including more excavation and retaining walls to stabilize shoring and foundations and long-term maintenance to protect any permanent facilities from any kind of landslide hazard. Steep slopes can also complicate construction traffic access.

The scale for determining the extent of landslide potential and steep slopes was based on the area of the site subject to landslide potential or slopes greater than 30 degrees. Available topographic and landslide maps and aerial photographs were used to rate this factor. The factor was rated using the following scale:

High: > 30% of the total area has landslide potential or slopes > 30 degrees.

Medium: ≤30% of the total area has landslide potential or slopes > 30 degrees.

Low: None of the area has landslide potential or slopes > 30 degrees.

Construction and Maintenance Access (ENGR-Acc)

This factor was evaluated with the question, "What is the proximity of a major roadway to the candidate site for construction and maintenance access?"

Access to the candidate site from the nearest major roadway is important for both truck traffic entering and leaving the site during construction and long-term operation for any permanent facilities.

A qualitative scale based upon the relative difficulty of entering and exiting the candidate site was used to evaluate this factor. The scale was as follows:

High: Access through private property or residential neighborhoods.

Medium: Access from a major roadway in one direction only.

Low: Access from a major roadway in both directions.

ENVIRONMENTAL/COMMUNITY FACTORS
Archeological and Historic Resources (ENVR-CR)

This factor was evaluated with the question, "Are archeological/historical resources likely to be present at the candidate site?"

This question addressed the likelihood of documented or known archeological or historical resources to be present within the candidate site. It is preferable to avoid archeological or historical resources on the site because of their inherent value and the fact that disturbing these resources could result in a high level of tribal involvement, regulatory and permitting requirements. Significant construction delays could occur if cultural resources are disturbed.

The qualitative scale based on review of available information and discussions with tribal or other cultural/historic experts was as follows:

> *High: Archeological/Cultural resources are likely to be present within or on the site.*
>
> *Medium: Archeological/Cultural resources possibly present within or on the site.*
>
> *Low: Archeological/Cultural resources are unlikely to be present within or on the site.*

Endangered Species Act Compliance – Conveyance (ENVR – Bio1)

This factor was evaluated with the question, "What potential is there for the portal to affect threatened/endangered/candidate/state priority species (i.e., special status species) or their habitat?"

The presence of special status species or their habitat on a candidate site was seen as a potential constraint as it may lead to impacts on sensitive environmental resources. The presence of special status species or their habitat could also result in significant permitting and mitigation requirements for the project.

Federal, state and local regulations require avoidance of these resources as a top priority; therefore, it was considered one of the key factors for the candidate site evaluation process. The presence of special status species was determined from surveys published by fish and wildlife agencies. Project biologists who made field observations of each of the candidate sites from public rights of way identified habitat for special status species. Based on this information, each candidate site was given a qualitative high, low, or no answer regarding the potential for temporary or permanent impacts to special status species or their habitat. The scale used included:

> *High: Documented presence of special status species or their suitable habitat on the site or directly adjacent and low background activity in the vicinity of the site.*
>
> *Low: Documented presence of special status species or their suitable habitat near the site, but high background activity in the vicinity of the site and best management practices would reduce potential for impact.*
>
> *No: Lack of documented special status species or suitable habitat on or near the site.*

High Quality Upland Habitat (ENVR – Bio3)

This factor was evaluated with the question, "Does construction of the portal disrupt or cross high quality upland habitat areas?"

The presence of high quality upland habitat on a candidate site was seen as a potential constraint as it may lead to impacts on sensitive environmental resources.

The question was developed to determine whether any high quality upland habitat would be affected by the construction of the portal. Assessment was performed using the following scale:

> *Yes: Construction of the portal is likely to disrupt or cross high quality upland habitat areas.*
>
> *No: Construction of the portal would not disrupt or cross high quality upland habitat areas.*

Wetlands (ENVR-Bio2)

This factor was evaluated with the question, "Would construction of the portal affect wetlands?"

Avoidance of high quality wetlands is a key consideration for federal, state and local permitting agencies. The presence of high quality wetlands is considered a substantial constraint to portal siting because of their high resource value and extensive permitting, buffering, and mitigation requirements.

The scale for determining the presence of high quality wetlands was based on review of available mapped wetland areas with limited site-specific evaluation. This key factor was evaluated based on the potential temporary or permanent impact to wetlands or their associated buffers within the candidate site.

> *High: The portal construction would permanently impact a Category 1 or 2 wetland.*
>
> *Medium: The portal construction would temporarily impact a Category 1 or 2 wetland.*
>
> *Low: The portal construction would permanently impact a Category 3 or 4 wetland, or a Category 1 or 2 wetland buffer.*
>
> *No: The portal construction would temporarily impact a buffer or have no impact on wetlands or buffers.*

Surface Water Impacts (ENVR - hydro)

This factor was evaluated with the question, "Would the construction of the portal disrupt natural surface waters or their buffers?"

The question evaluated the potential to affect natural surface waters or their buffers. Direct impacts to surface water could reduce existing and long-term fish and/or wildlife habitat. Activities at the candidate site can substantially impact adjacent streams and, therefore, it is considered one of the key factors in the portal site selection process.

The evaluation was based on the potential of temporary or permanent impacts to streams, lakes, Puget Sound, and/or associated buffers or shoreline zones. Temporary or permanent impacts could include loss of vegetation, discharge or dewatering water, lower water levels due to nearby dewatering, land erosion, site erosion, and transport of sediment to surface water, etc. The following scale was used to evaluate this factor:

> *High: It is likely that the construction of the portal would impact natural surface water.*
>
> *Medium: It is possible that the construction of the portal would impact natural surface water.*
>
> *Low: It is unlikely that the construction of the portal would impact natural surface water.*
>
> *No: The construction of the portal would not impact natural surface water.*

Traffic Disruption – Road & Streets (ENVR-Acc1)

This factor was evaluated with the question, " To what extent will construction of the portal disrupt existing transportation facilities?"

Traffic disruption is a frequently stated concern of residents. The question was aimed to assess the potential impacts on local traffic during the construction and operation of permanent facilities at the candidate site.

The following scale was used for determining traffic disruption:

> *High: Potential to worsen Level of Service (LOS) conditions on roadways with existing capacity limitations.*
>
> *Medium: Construction access on local streets and arterials with no identified capacity problems.*
>
> *Low: Available roadway network and/or right of way allow minimal disruption of traffic flow.*

Traffic Disruption – Access (ENVR-Acc2)

This factor was evaluated with the question, " To what extent will construction of the portal disrupt local traffic access?"

The question evaluated the potential for residential properties to be affected by construction at the candidate site during the construction and operation phases.

The following scale was used to evaluate this factor:

> *High: Construction of the portal will require long- term (entire construction period) detours or blocked local access.*
>
> *Medium: Construction of the portal will require short- term (several days) detours or blocked local access.*

Low: Construction of the portal will not require any long- term detours or blocked local access.

Land Use Compatibility (ENVR-LUC)

This factor was evaluated with the question, "To what extent will construction of the portal disrupt adjacent land uses?"

In terms of evaluating compatibility with surrounding land uses, it was assumed that the candidate sites with the highest levels of current development density would present the highest constraint to portal construction.

The evaluation was based on a quantitative measurement of structures adjacent to the candidate site.

LAND ACQUISITION & JURISDICTIONAL FACTORS

Relative Number of Acquisition Parcels (LAND-Time9c)

This factor was evaluated with the question, "What is the estimated total number of private property acquisitions in the candidate site?"

The evaluation question was designed to address the issues related to time and complexity associated with potential acquisition of property rights for candidate sites. Higher numbers of parcels may be considered a constraint. The evaluation was based on the number of parcels within the candidate site.

Relative Level of Upland Property Development (LAND-Time10c)

This factor was evaluated with the question: "What is the relative magnitude of construction and permanent impacts due to upland development and known level of pending development on the candidate site?"

The factor was designed to assess the relative time, complexity and disruption associated with development density on the candidate site. It is assumed that higher development density would result in more complicated acquisitions and relocations and therefore would require more time and resources.

The factor was evaluated using the following scale:

High: Highest range of construction and permanent impacts due to existing and known pending level of development.

Medium: Middle range of construction and permanent impacts due to existing and known pending level of development.

Low: Lowest range of construction and permanent impacts due to existing and known pending level of development.

Legal Restrictions on Title (LAND-Time3c)

This factor was evaluated with the question, "Are there existing legal restrictions to title in the candidate site which would prevent or limit planned construction?"

It was imperative that any legal restriction on title be identified and addressed in the evaluation process since it can pose significant delay in the acquisition of the sites. The question was asked to assess any restriction on title that would affect construction and operation at the candidate sites.

The factor was evaluated using the following scale:

High: Title restriction severely limits available useable land area and is difficult or impossible to remove.

Medium: Some title restrictions exist but can be removed with some effort or project can be adapted to accommodate.

Low: Title restrictions do not limit available useable land.

Complexity of Relocations – Conveyance (LAND-Time5c)

This factor was evaluated with the question, "How difficult and time consuming will it be for occupants in the candidate site to relocate?"

This question is aimed at determining the degree of complexity for relocating the occupants in the candidate sites. Assessment was based on the type and intensity of land use at the candidate site.

The factor was evaluated using the following scale:

High: Relocations include unique businesses with unique site requirements.

Medium: Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate.

Low: Relative level of complexity in occupant relocation appears to be low.

FINANCIAL FACTORS
Relative Cost of Site Acquisition and Relocation (LAND-Finan1b)

This factor was evaluated with the question, "What is the estimated total relative cost of private property and acquisition and relocations in the candidate site?"

The relative price of land acquisitions and relocations is another important factor used to compare the candidate sites in terms of financial constraint.

The factor was evaluated using the following scale:

High: Highest cost.

Medium: Moderate cost.

Low: Lowest cost.

Secondary factors

When the evaluation matrix was developed, six of the primary evaluation factors were reduced to secondary factors because additional site-specific information was needed to

further define the differences among the candidate sites within each portal siting area. These secondary factors were answered in the evaluation matrix but were not included in the modeling.

These factors include:

Site Ground/Surface Water Pretreatment and Disposal (ENGR-Constr)

This secondary factor was evaluated with the question, "What is the feasibility of reasonably pre-treating and disposing of ground and surface water related to construction activities at the candidate site?"

The question was developed to assess the feasibility of site ground/surface water to be pre-treated and disposed to the nearest major stormwater drainage system.

The evaluation scale was based on the quantified distance from the portal site to the nearest major stormwater or sewer drainage system. This factor was considered to be secondary because a site-specific portal location is needed to answer the question.

Feasibility of Making System Portal Connections (ENGR-Constr2)

This secondary factor was evaluated with the question, "If applicable, at this portal site, what is the feasibility of connecting existing pipelines to the tunnel at this site?"

The scale was based on the relative difficulty of making an existing piping connection to the tunnel.

High: Connections difficult and complex.

Medium: Connections of average difficulty

Low: Connections less complex than typical.

Residential Construction Disruption – Temporary (LAND-Cost8c-r)

This secondary factor was evaluated with the question, "What is the relative magnitude of projected temporary construction disruption on residential property uses adjacent to the candidate site?"

This question addressed one of the constraints imposed by the construction at the candidate site to the adjacent residential land use. The following scale was used to assess this factor:

High: Appear to have the highest levels of temporary residential disruption in the candidate site.

Medium: Appear to have the mid- level of temporary residential disruption in candidate site.

Low: Appear to have the lowest levels of temporary residential disruption in the candidate site.

This question was considered a secondary factor because many aspects of disruption cannot be adequately considered until more is known about the design and construction of the portal.

Residential Construction Disruption – Permanent (LAND-Cost8d-r)

This secondary factor was evaluated with the question, "What is the relative magnitude of projected permanent construction disruption on residential property uses adjacent to the candidate site?"

This question was developed to evaluate the impact of the construction at the candidate site to the adjacent residential land use. The following scale was used to assess this factor.

> *High: Appear to have the highest levels of permanent residential disruption in the candidate site.*
>
> *Medium: Appear to have the mid- level of permanent residential disruption in the candidate site.*
>
> *Low: Appear to have the lowest levels of permanent residential disruption in the candidate site.*

This question was considered a secondary factor because many aspects of permanent disruption cannot be adequately considered until more is known about the design and construction of the portal. Buffers and low-use requirements for the project after construction are projected to minimize impacts to adjacent residential land use.

Commercial Construction Disruption – Temporary (LAND-Cost8c-c)

This secondary factor was evaluated with the question, "What is the relative magnitude of projected temporary construction disruption on commercial property uses adjacent to the candidate site?"

This question was designed to address the impacts of construction at the candidate site to the adjacent commercial land use. The scale used to evaluate this factor is:

> *High: Appears to have the highest levels of temporary commercial disruption in the candidate site.*
>
> *Medium: Appears to have the mid- level of temporary commercial disruption in the candidate site.*
>
> *Low: Appears to have the lowest levels of temporary commercial disruption in the candidate site.*

This question was considered a secondary factor because many aspects of permanent disruption cannot be adequately considered until more is known about the design and construction of the portal. Buffers and low-use requirements for the project after construction are projected to minimize impacts to adjacent residential land use.

Commercial Construction Disruption – Permanent (LAND-Cost8d-c)

This secondary factor was evaluated with the question, "What is the relative magnitude of projected permanent construction disruption on commercial property uses adjacent to candidate sites?"

This question was developed to determine the impacts of the construction at the candidate site to the adjacent commercial land use. The following scale was used to assess this factor.

> *High: Appears to have the highest levels of permanent commercial disruption in the candidate site.*
>
> *Medium: Appears to have a mid-level permanent commercial disruption in the candidate site.*
>
> *Low: Appears to have the lowest levels of permanent commercial disruption in the candidate site.*

This question was considered a secondary factor because many aspects of permanent disruption cannot be adequately considered until more is known about the design and construction of the portal. Buffers and low use requirements for the project after construction are projected to minimize impacts to adjacent residential land use.

Evaluation Results of Level 2 Portal Screening

Level 2 portal screening results summarized by portal siting area are included in Attachment F. Attachment F shows the candidate sites that will be carried forward to Level 3 screening. Evaluation information including engineering and environmental features of portal siting areas as well as specific evaluation data for each candidate site are summarized for the Unocal and Route 9 conveyance system alternatives.

Two to four candidate sites within each portal siting area were selected to be carried forward to the Level 3 portal screening process. The candidate sites to be included in the Level 3 screening were the candidate sites that met engineering needs and minimized environmental and community impacts. Although some potential impacts to the environment and community were identified with the candidate sites, it was the goal of King County to avoid or minimize impacts to sensitive areas consistent with environmental regulations.

A single candidate site for each portal siting area will be recommended as part of the Level 3 portal screening. The Level 3 portal screening will include a thorough consideration of engineering, environmental, community, finance, land acquisition and other data as well as input from jurisdictions.

Table 3 lists the candidate sites to be carried forward to Level 3.

Table 3. Final List of Candidate Sites based on Level 2 Portal Screening

Route 9 Influent Corridor		Route 9 Effluent 195th Corridor		Route 9 Effluent 228th Corridor		Unocal Influent Corridor	
Portal Area	*Site*	*Portal Area*	*Site*	*Portal Area*	*Site*	*Portal Area*	*Site*
10	I10-A	19*	E19-A	19*	E19-A	3*	I3-D
	I10-C		E19-C		E19-C		I3-E
	I10-D		E19-E		E19-E		I3-F
	I10-E	23	E23-A	22	E22-C	5	I5-B
11*	I11-A		E23-D		E22-D		I5-G
	I11-B		E23-F		E22-E		I5-X
	I11-C	27	E27-A		E22-F	7*	I7-A
34	I34-A/B		E27-B	24	E24-A		I7-B
	I34-F		E27-C		E24-B		I7-C
41*	I41-A	7	E7-A		E24-C	10	I10-A
	I41-C		E7-B	26*	E26-A		I10-C
	I41-D		E7-C		E26-C		I10-D
	I41-X	45	E45-A		E26-D		I10-E
44*	E44-C		E45-C	30	E30-A	11*	I11-A
	E44-D		E45-D		E30-B		I11-B
	E44-E	44*	E44-C		E30-C		I11-C
			E44-D	33*	E33-A	12	I12-C
			E44-E		E33-C		I12-E
		41*	E41-A		E33-D	13	I13-A
			E41-C	37	E37-A		I13-B
			E41-D		E37-C		I13-C
			E41-X		E37-D	14*	I14-A
		5*	I5-B	39*	E39-B		I14-B
			I5-G		E39-C		I14-D
			I5-X		E39-D		

** These are primary portals*

Attachment A

Level 1 Screening Maps

Level 1 Portal Screening Maps		
Portal Siting Area	Aerial Map	Existing Land Use Map
3	Figure 1-1	Figure 1-23
5	Figure 1-2	Figure 1-24
7	Figure 1-3	Figure 1-25
10	Figure 1-4	Figure 1-26
11	Figure 1-5	Figure 1-27
12	Figure 1-6	Figure 1-28
13	Figure 1-7	Figure 1-29
14	Figure 1-8	Figure 1-30
19	Figure 1-9	Figure 1-31
22	Figure 1-10	Figure 1-32
23	Figure 1-11	Figure 1-33
24	Figure 1-12	Figure 1-34
26	Figure 1-13	Figure 1-35
27	Figure 1-14	Figure 1-36
30	Figure 1-15	Figure 1-37
33	Figure 1-16	Figure 1-38
34	Figure 1-17	Figure 1-39
37	Figure 1-18	Figure 1-40
39	Figure 1-19	Figure 1-41
41	Figure 1-20	Figure 1-42
44	Figure 1-21	Figure 1-43
45	Figure 1-22	Figure 1-44

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Figure 1-1

Portal Siting Area 3

BRIGHTWATER REGIONAL WASTEWATER TREATMENT SYSTEM

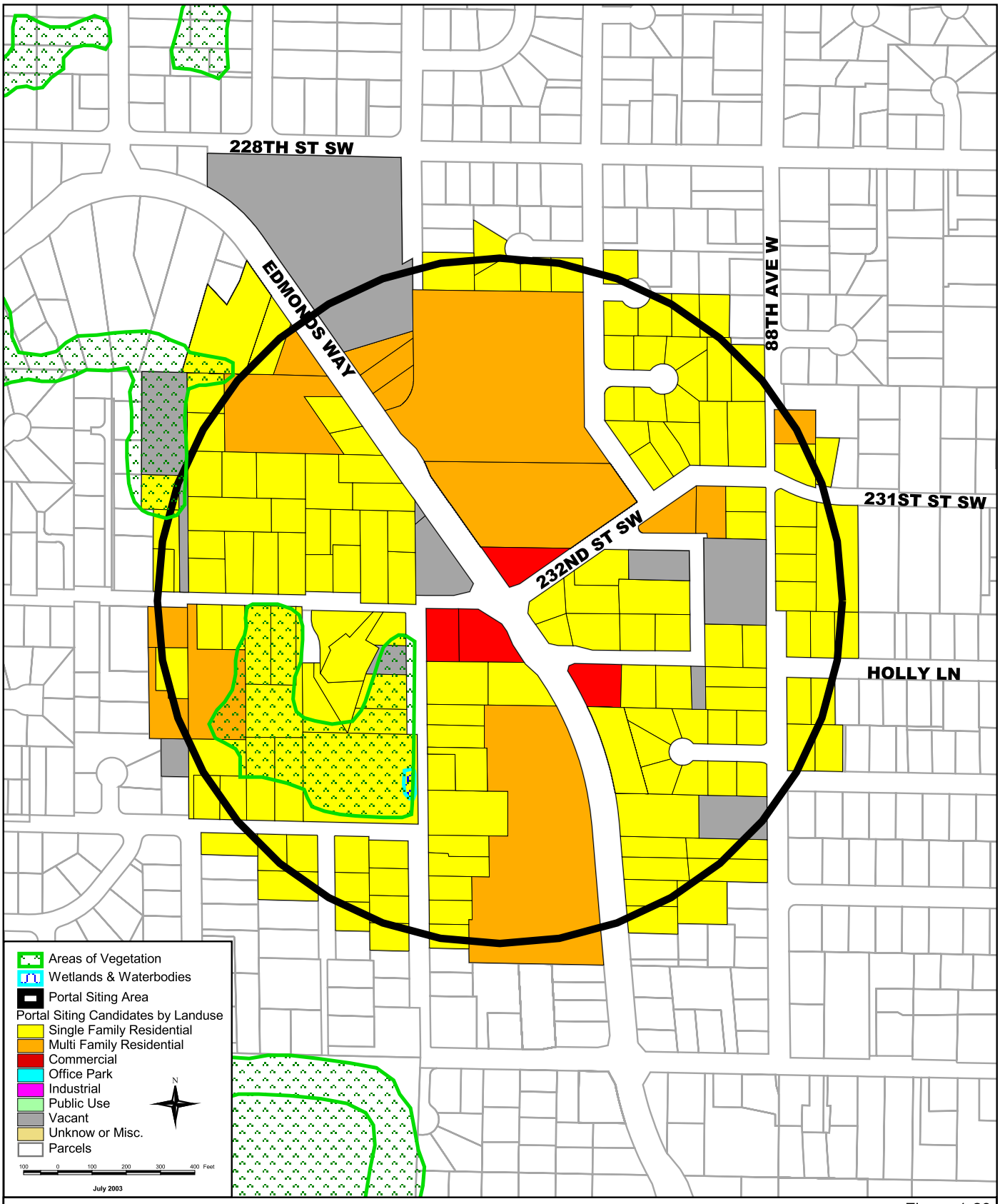

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Figure 1-23

Existing Land Use
Portal Siting Area 3

BRIGHTWATER REGIONAL
WASTEWATER TREATMENT SYSTEM

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Figure 1-2

Portal Siting Area 5

BRIGHTWATER REGIONAL WASTEWATER TREATMENT SYSTEM

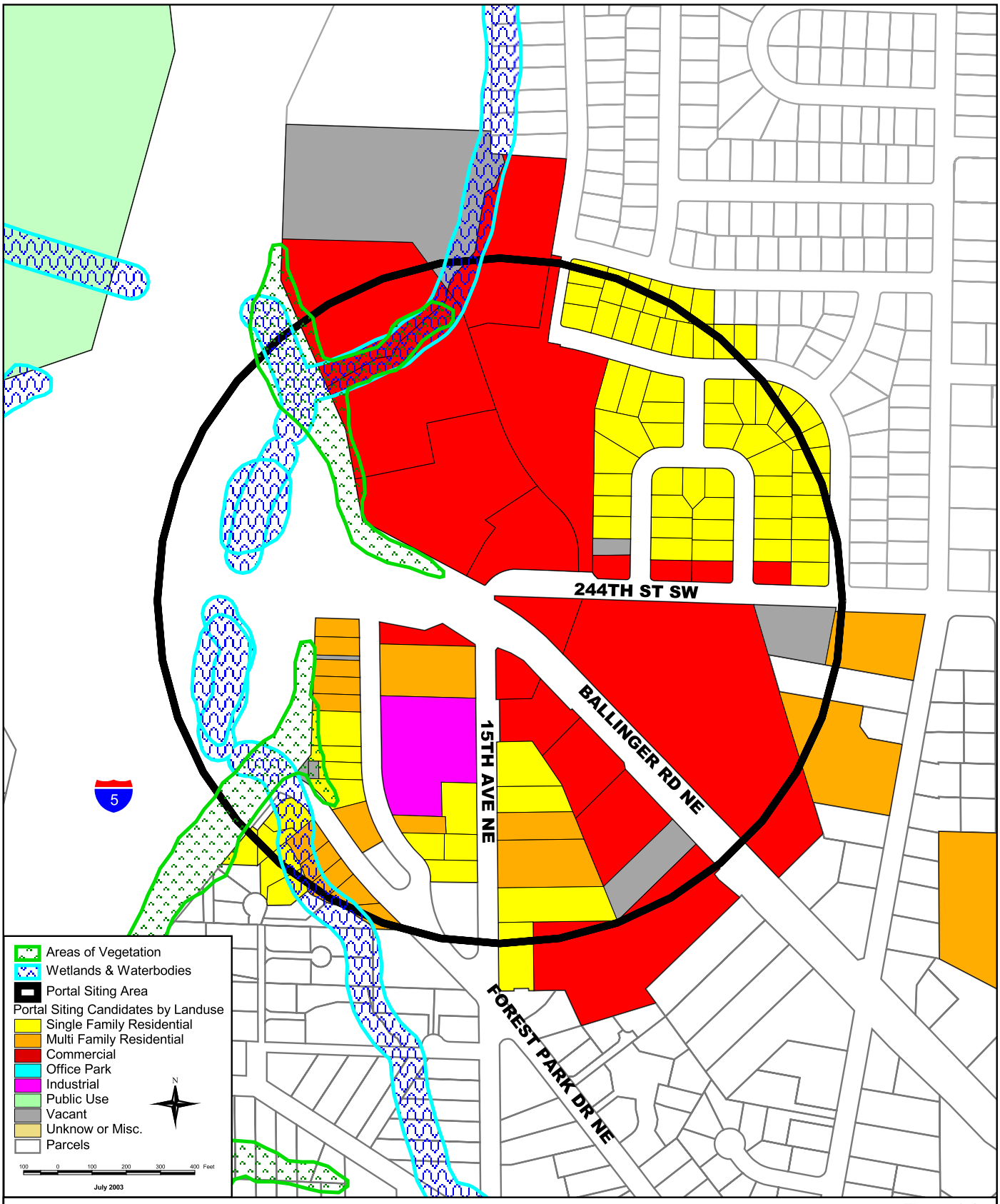

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Figure 1-24

Existing Land Use
Portal Siting Area 5

BRIGHTWATER REGIONAL
WASTEWATER TREATMENT SYSTEM

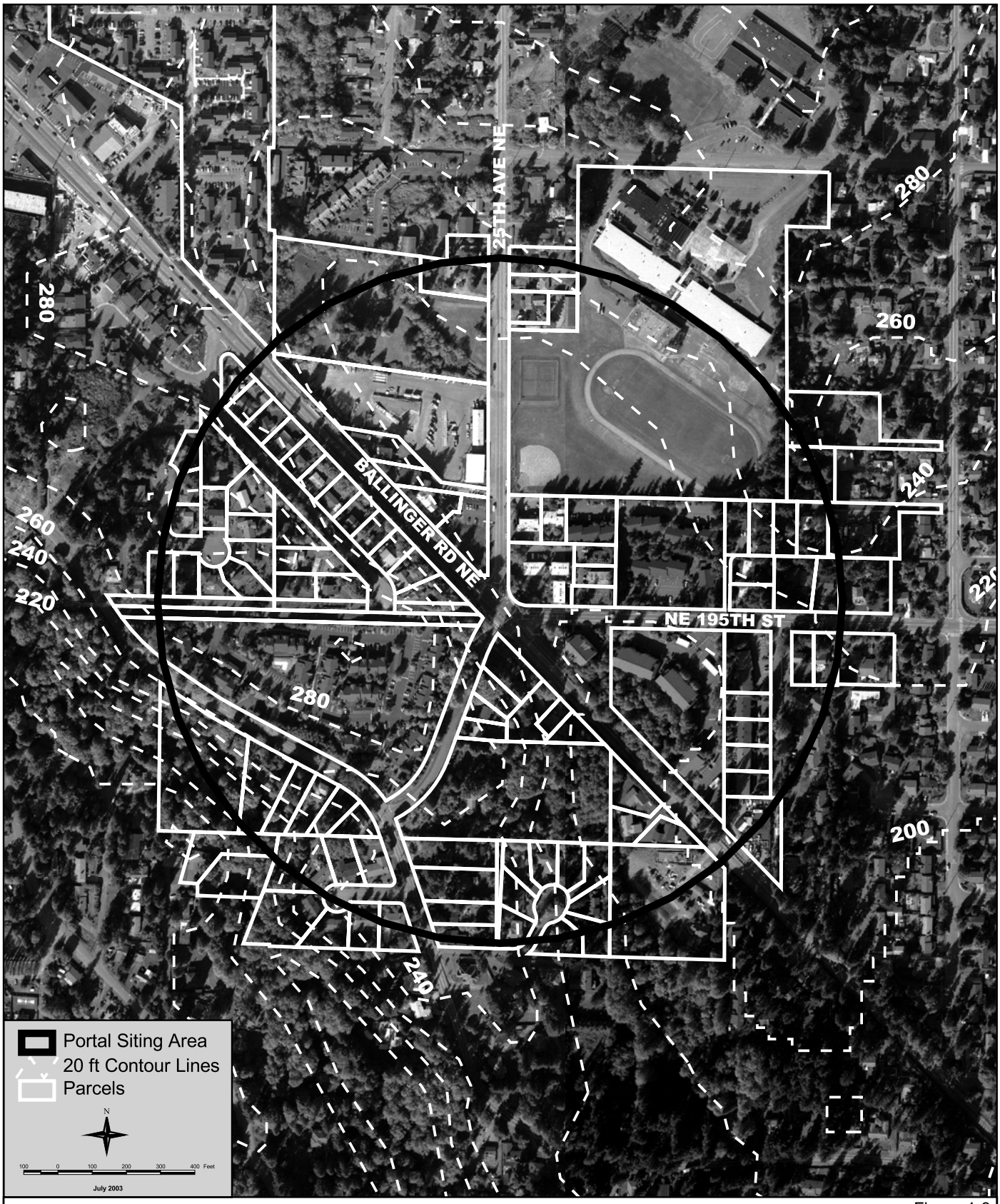

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Figure 1-3

Portal Siting Area 7

BRIGHTWATER REGIONAL WASTEWATER TREATMENT SYSTEM

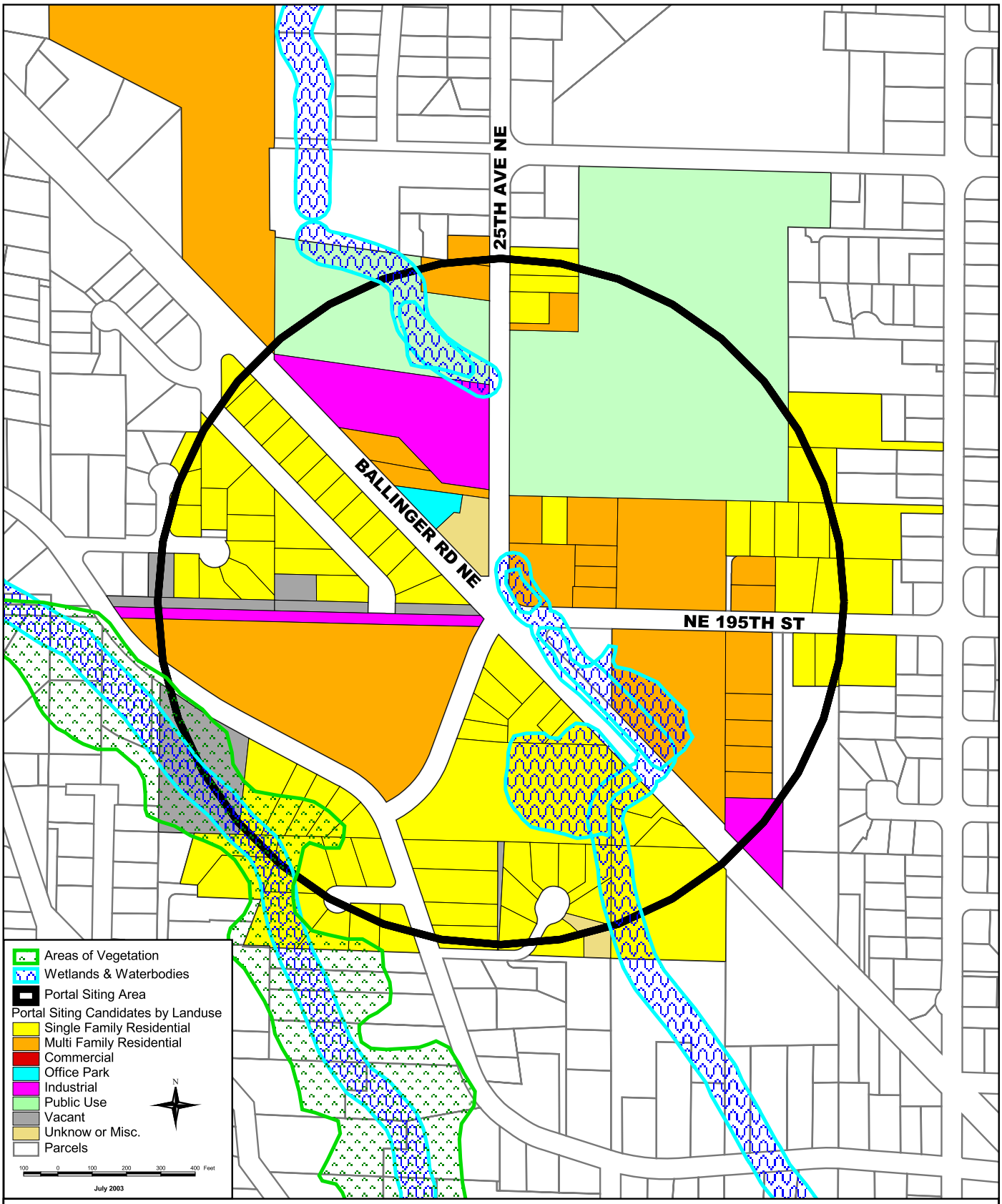

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Figure 1-25

Existing Land Use
Portal Siting Area 7

BRIGHTWATER REGIONAL WASTEWATER TREATMENT SYSTEM

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Figure 1-4

Portal Siting Area 10

BRIGHTWATER REGIONAL WASTEWATER TREATMENT SYSTEM

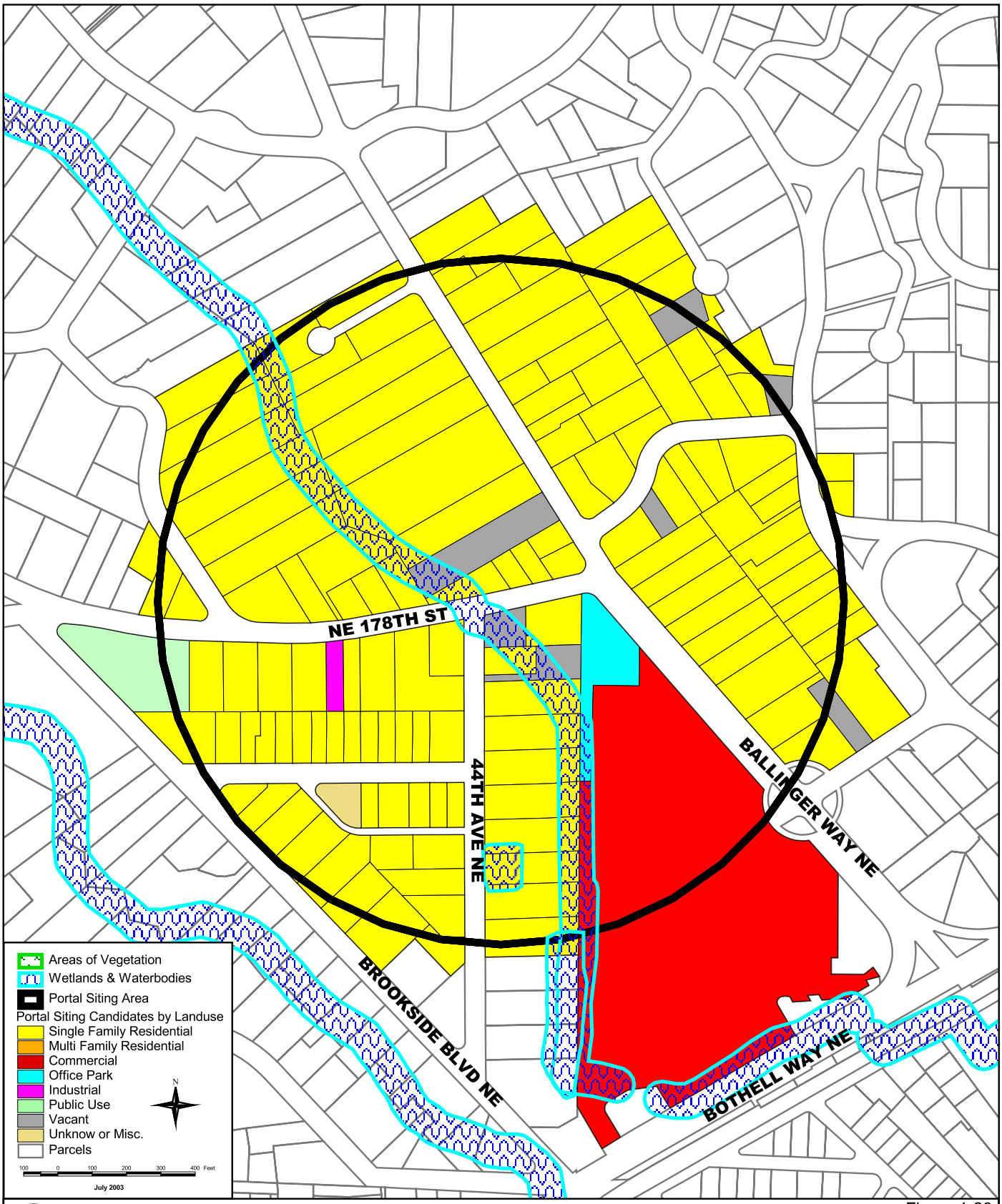

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Figure 1-26

Existing Land Use
Portal Siting Area 10

BRIGHTWATER REGIONAL
WASTEWATER TREATMENT SYSTEM

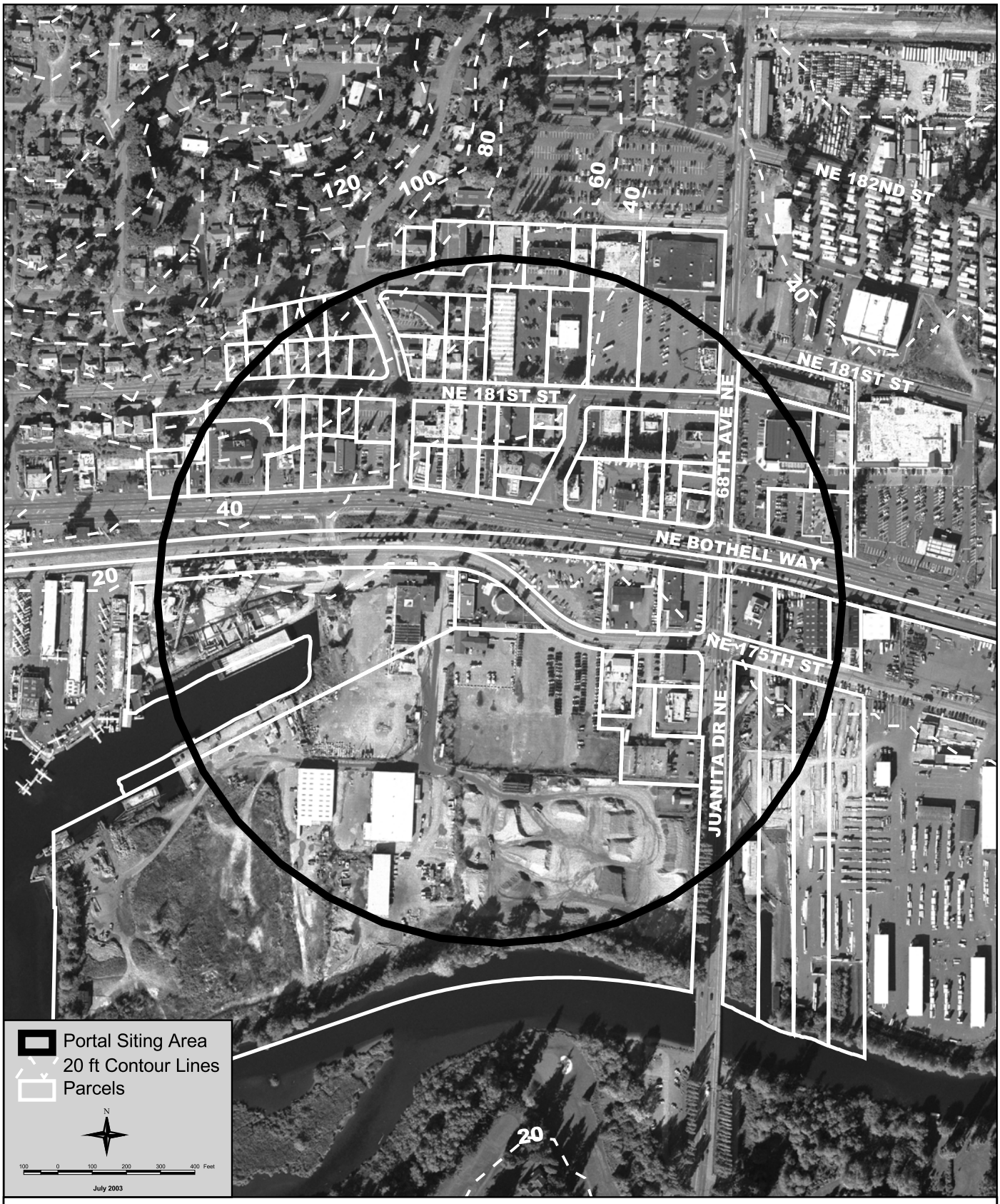

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Figure 1-5

Portal Siting Area 11

BRIGHTWATER REGIONAL WASTEWATER TREATMENT SYSTEM

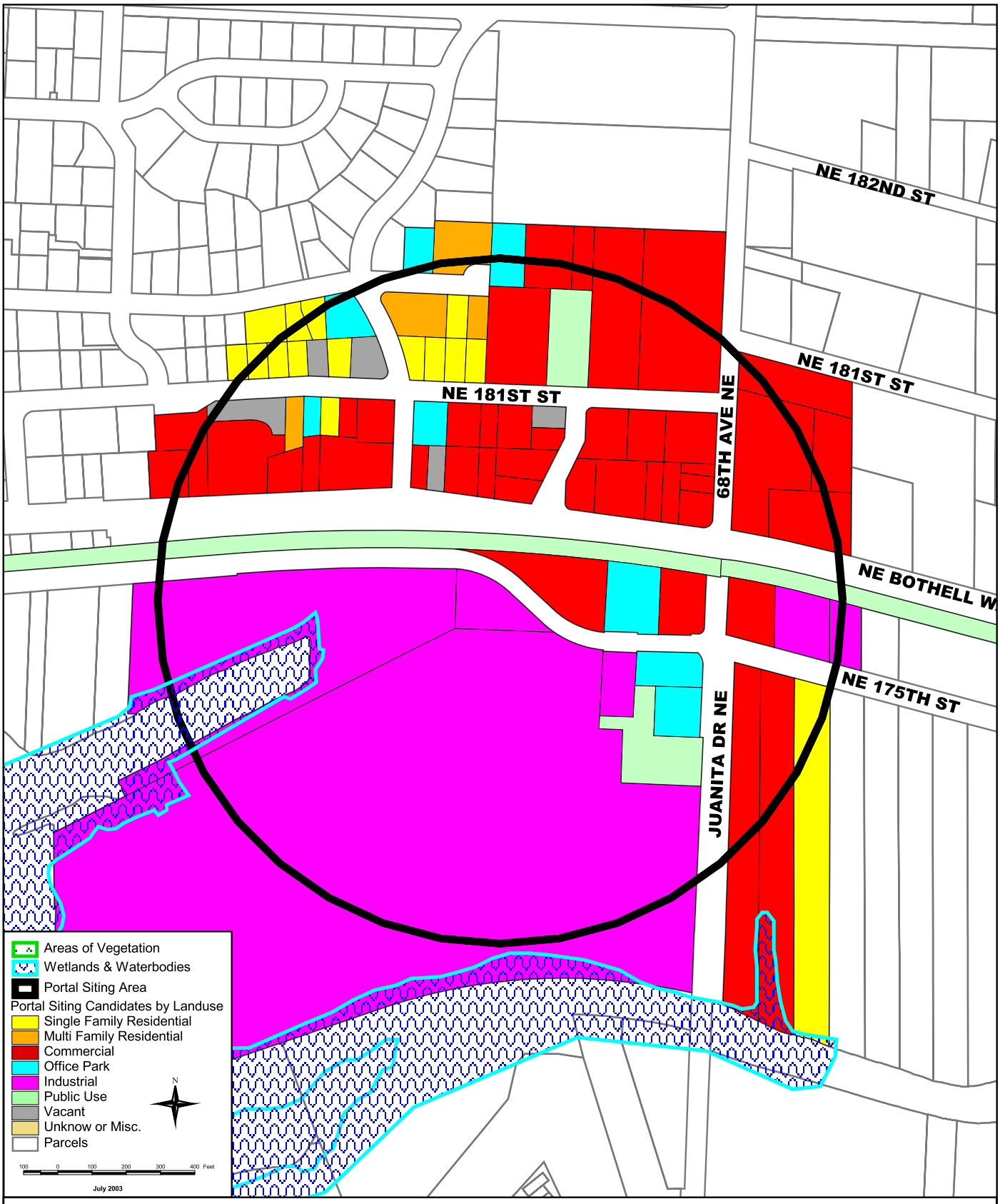

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Figure 1-27

Existing Land Use
Portal Siting Area 11

BRIGHTWATER REGIONAL
WASTEWATER TREATMENT SYSTEM

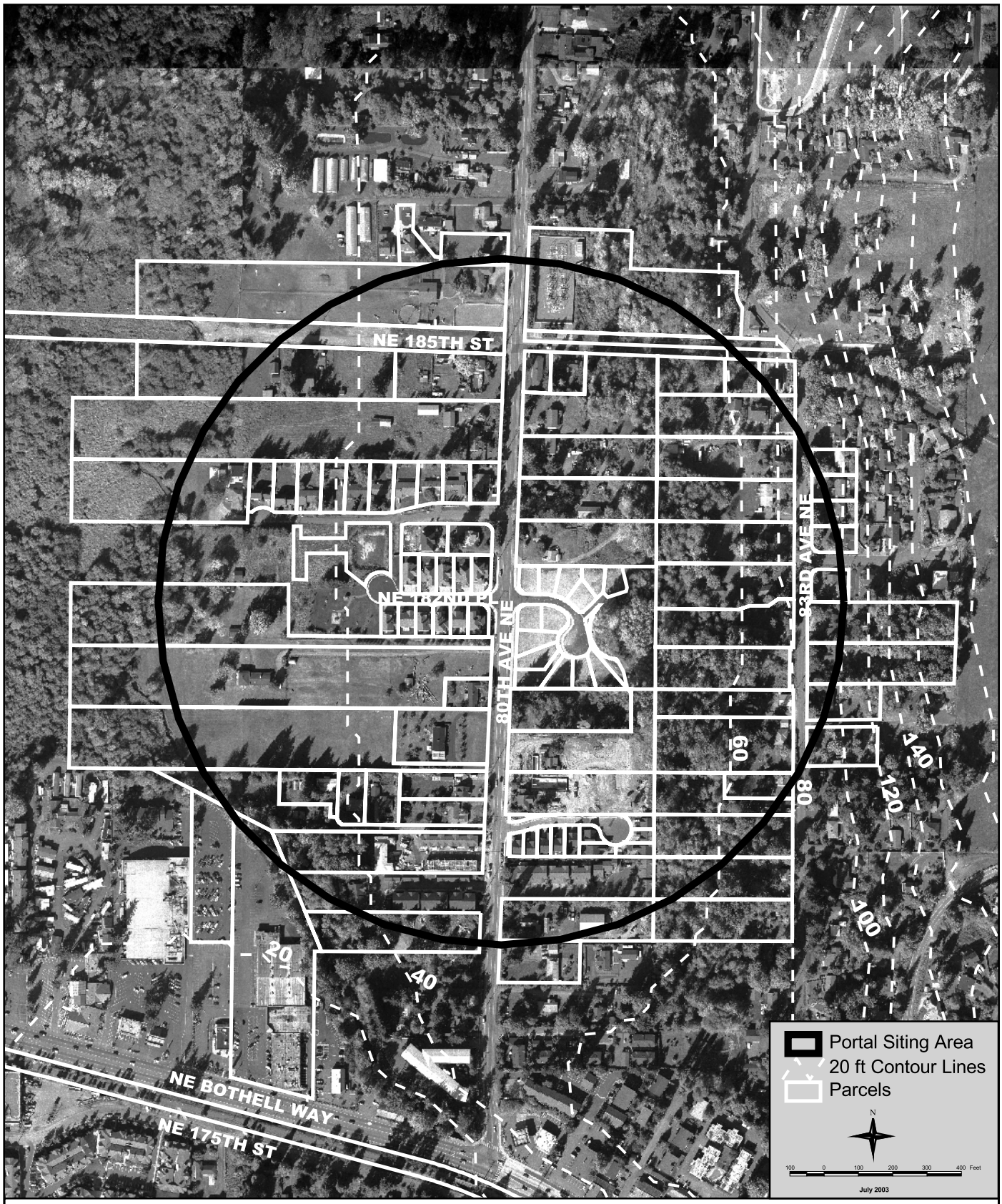

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Figure 1-6

Portal Siting Area 12

BRIGHTWATER REGIONAL WASTEWATER TREATMENT SYSTEM

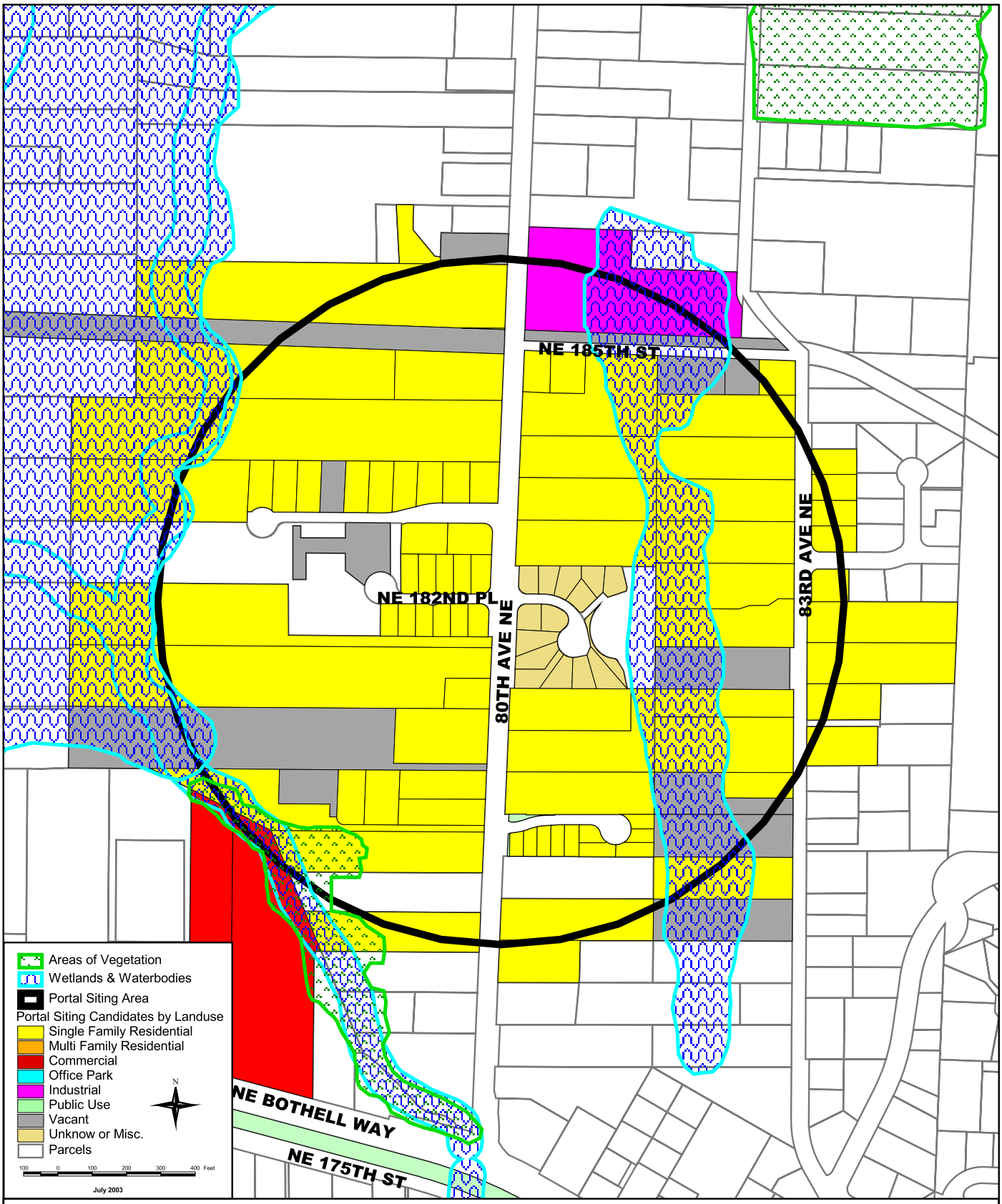

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Figure 1-28

Existing Land Use
Portal Siting Area 12

BRIGHTWATER REGIONAL WASTEWATER TREATMENT SYSTEM

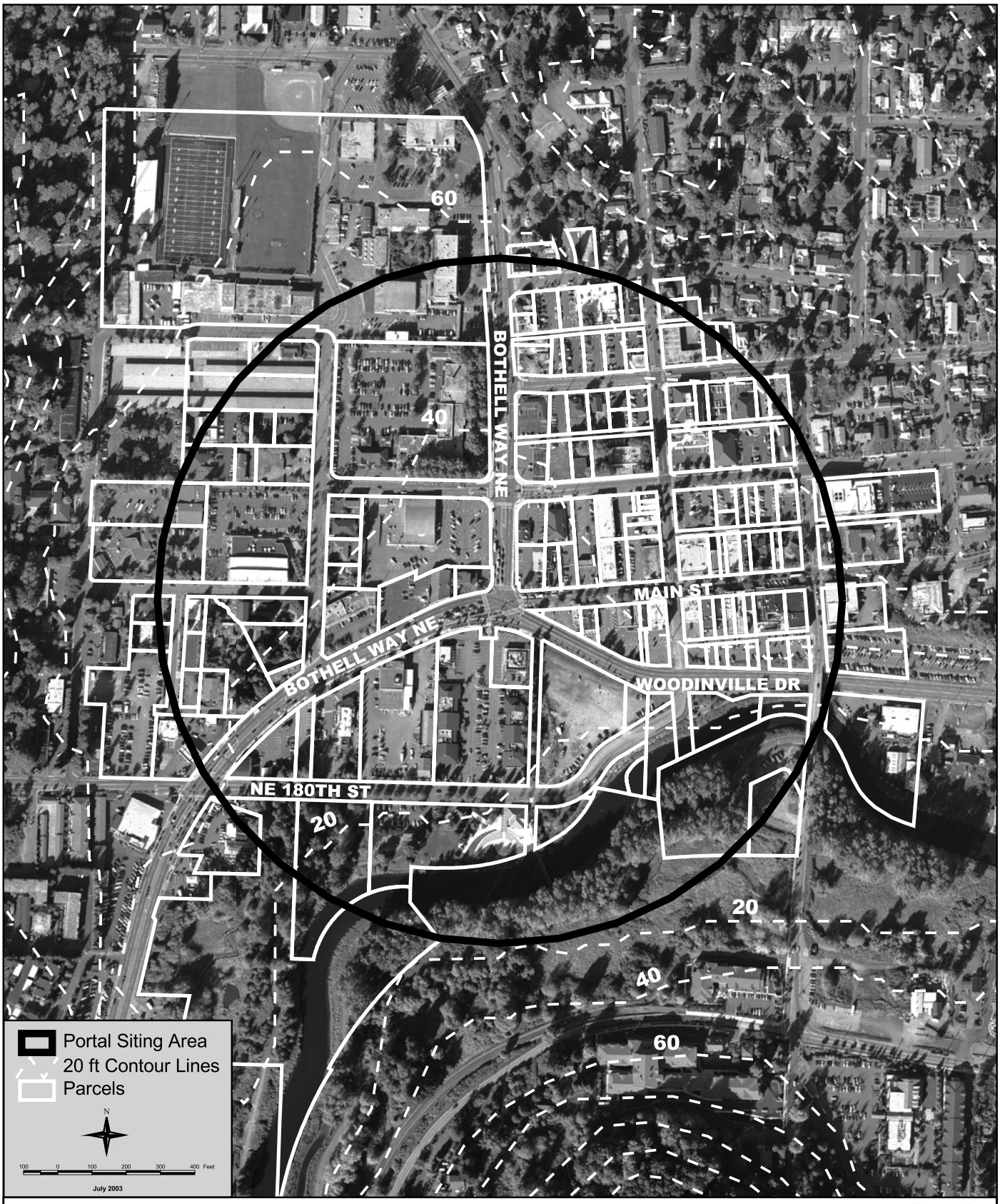

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Figure 1-7

Portal Siting Area 13

BRIGHTWATER REGIONAL WASTEWATER TREATMENT SYSTEM

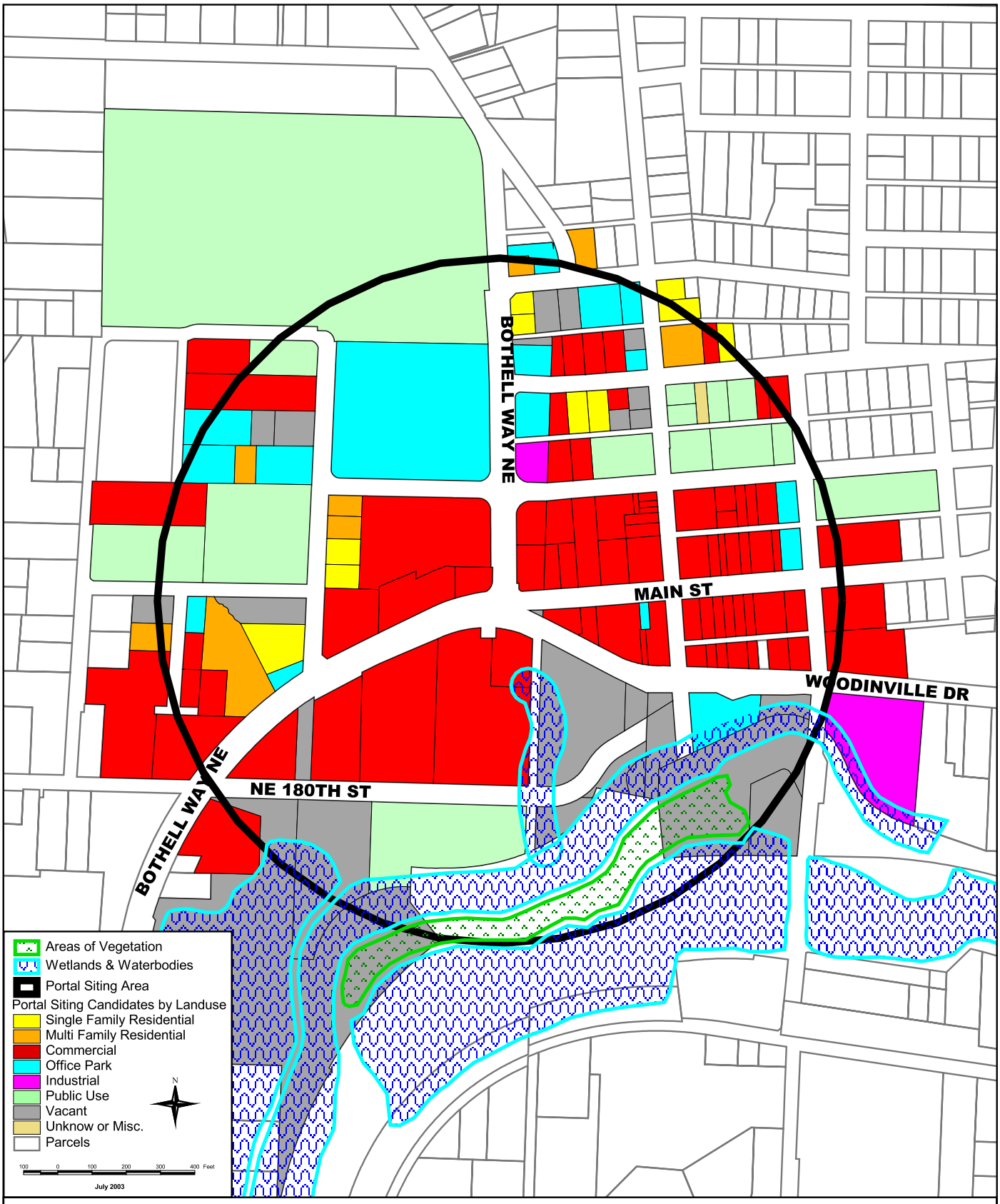

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Figure 1-29

Existing Land Use
Portal Siting Area 13

BRIGHTWATER REGIONAL
WASTEWATER TREATMENT SYSTEM

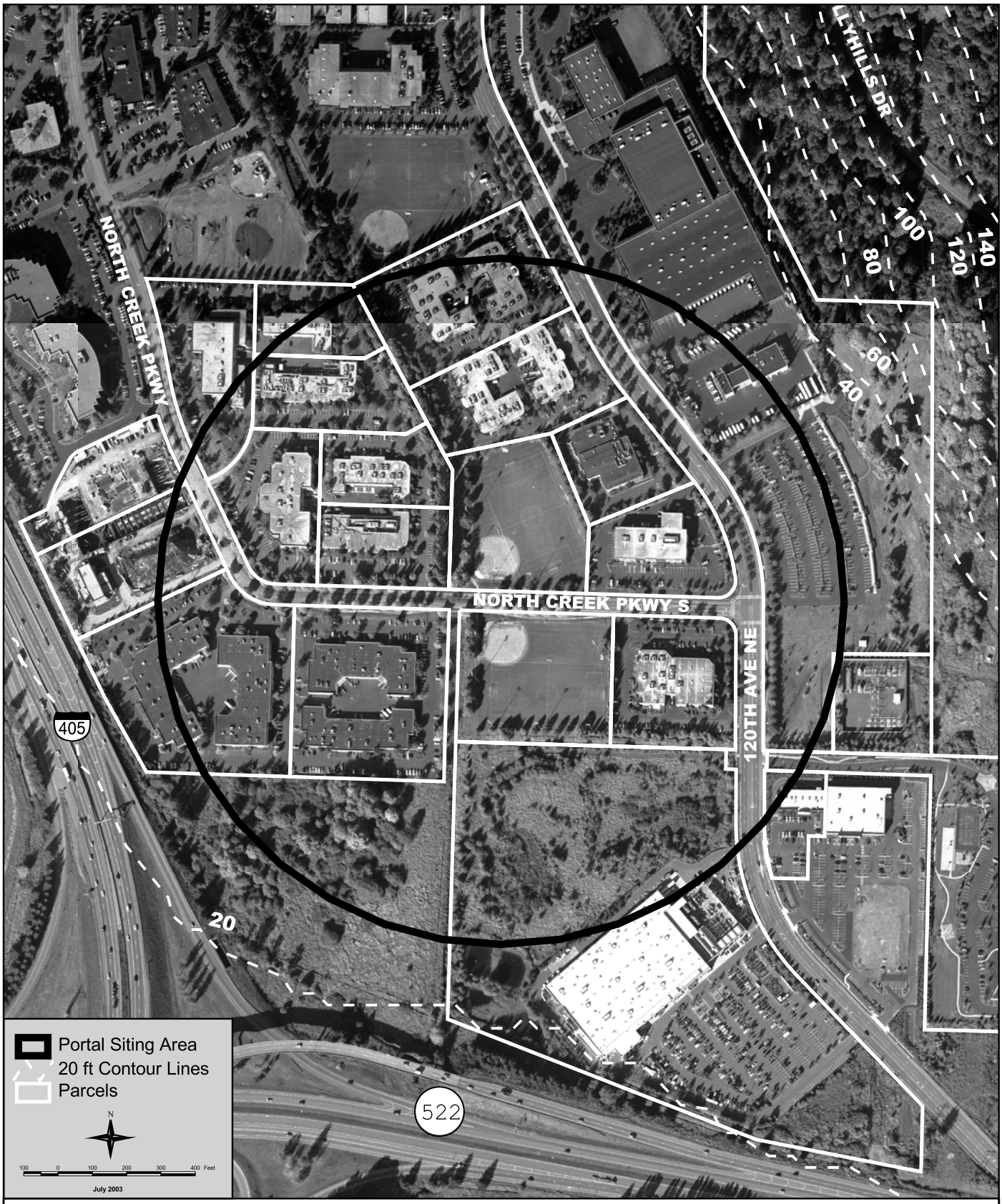

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Figure 1-8

Portal Siting Area 14

BRIGHTWATER REGIONAL WASTEWATER TREATMENT SYSTEM

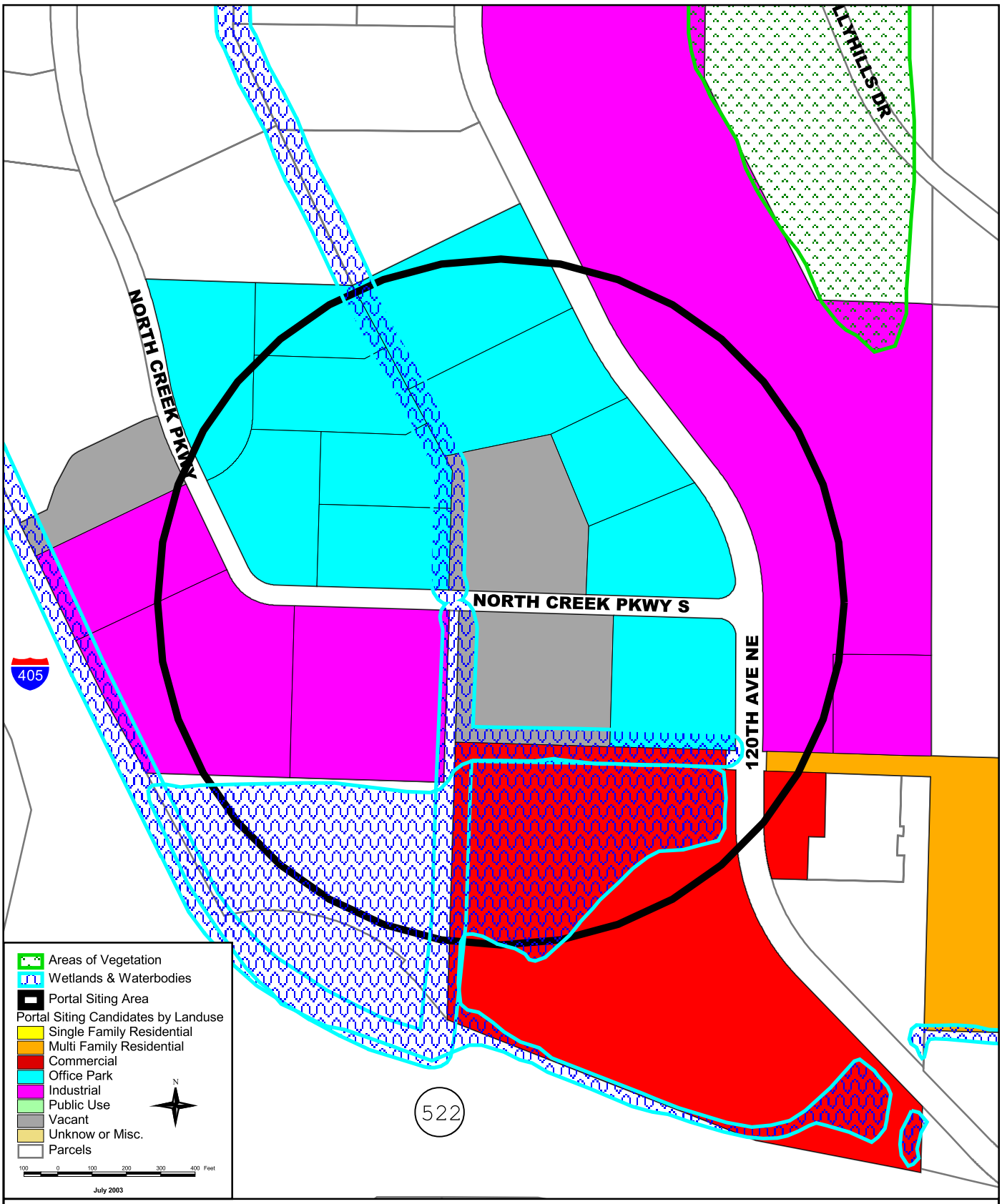

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Figure 1-30

Existing Land Use
Portal Siting Area 14

BRIGHTWATER REGIONAL
WASTEWATER TREATMENT SYSTEM

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Figure 1-9

Portal Siting Area 19

BRIGHTWATER REGIONAL WASTEWATER TREATMENT SYSTEM

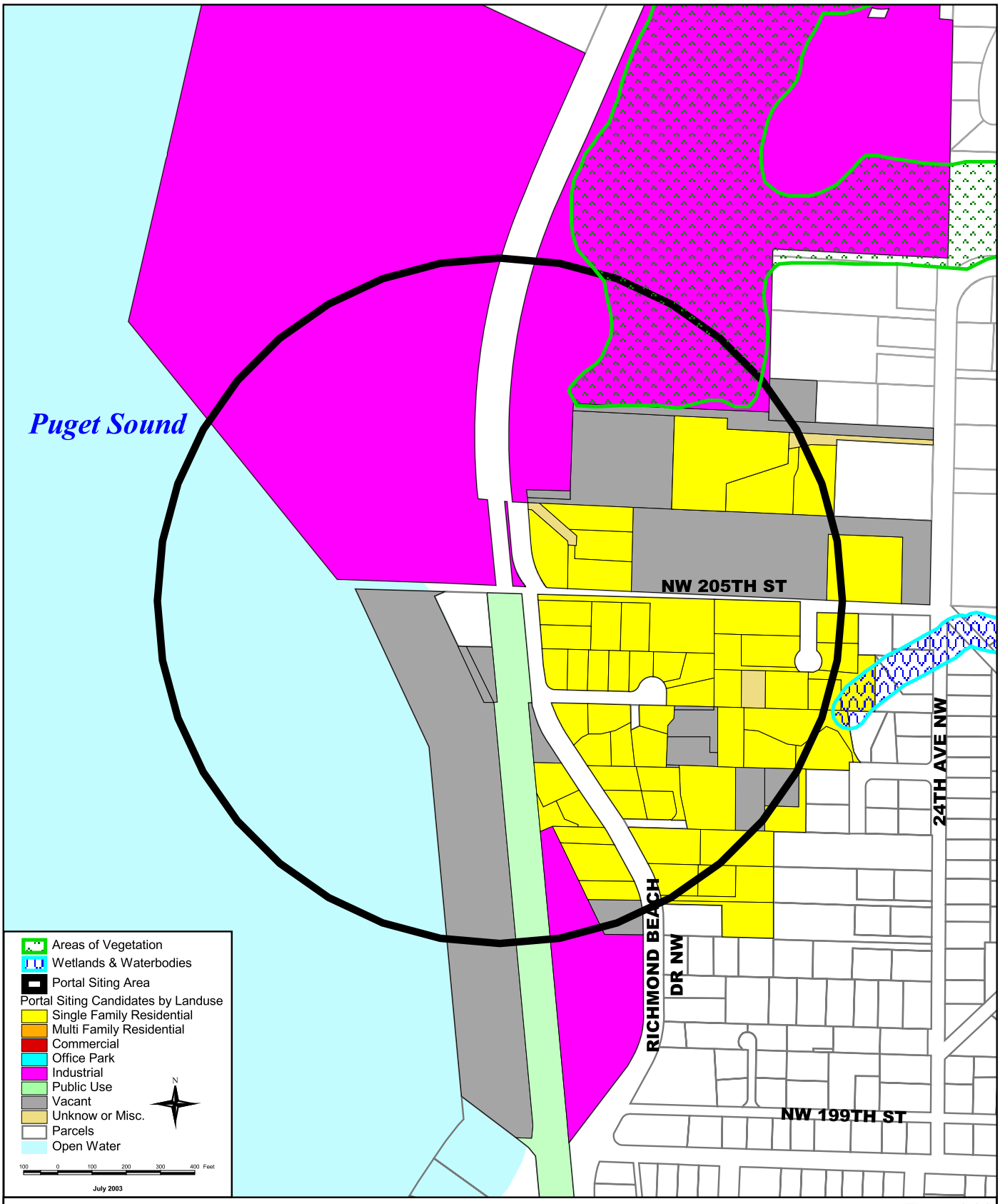

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Figure 1-31

Existing Land Use
Portal Siting Area 19

BRIGHTWATER REGIONAL WASTEWATER TREATMENT SYSTEM

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Figure 1-10

Portal Siting Area 22

BRIGHTWATER REGIONAL WASTEWATER TREATMENT SYSTEM

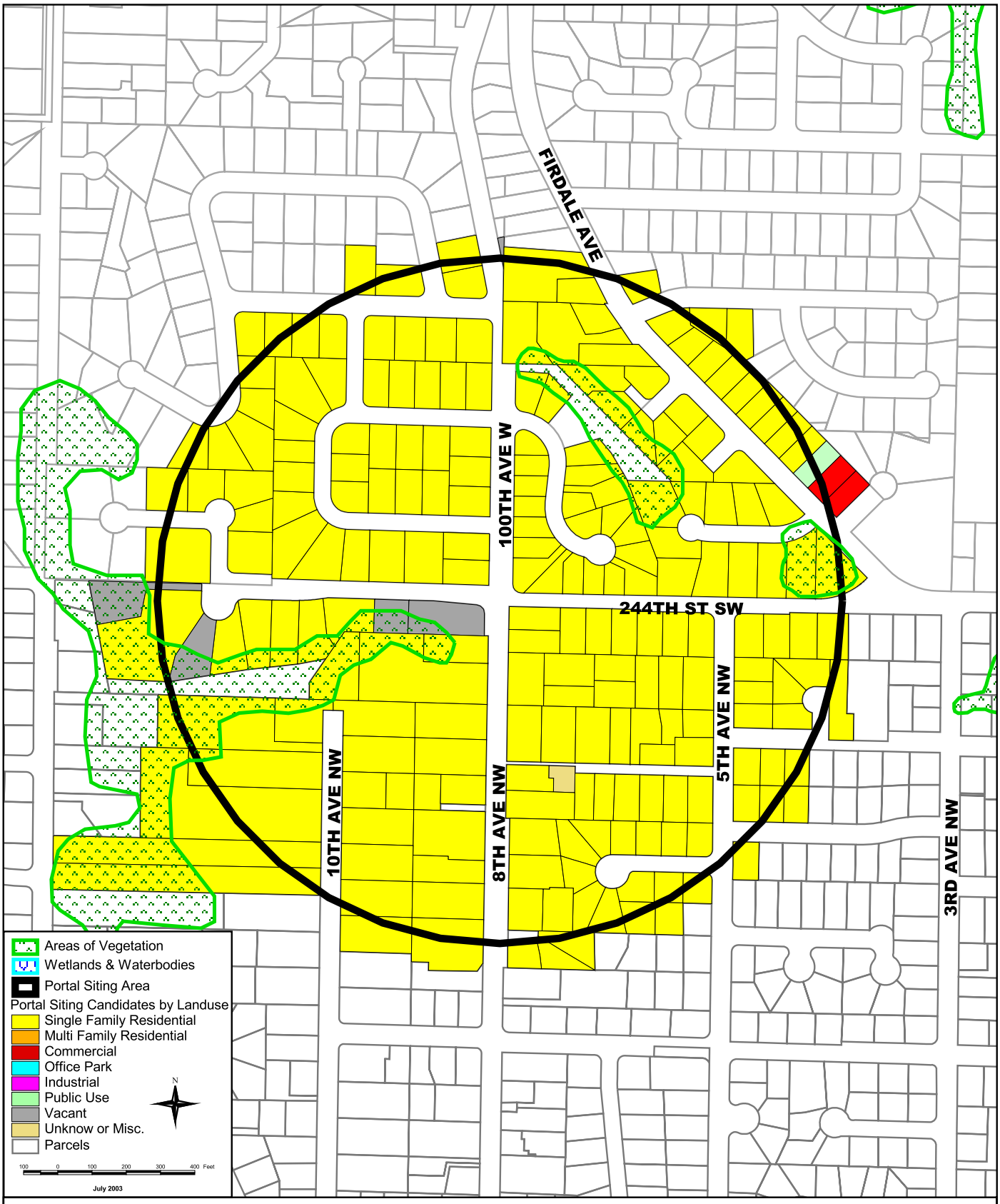

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Figure 1-32

Existing Land Use
Portal Siting Area 22

BRIGHTWATER REGIONAL
WASTEWATER TREATMENT SYSTEM

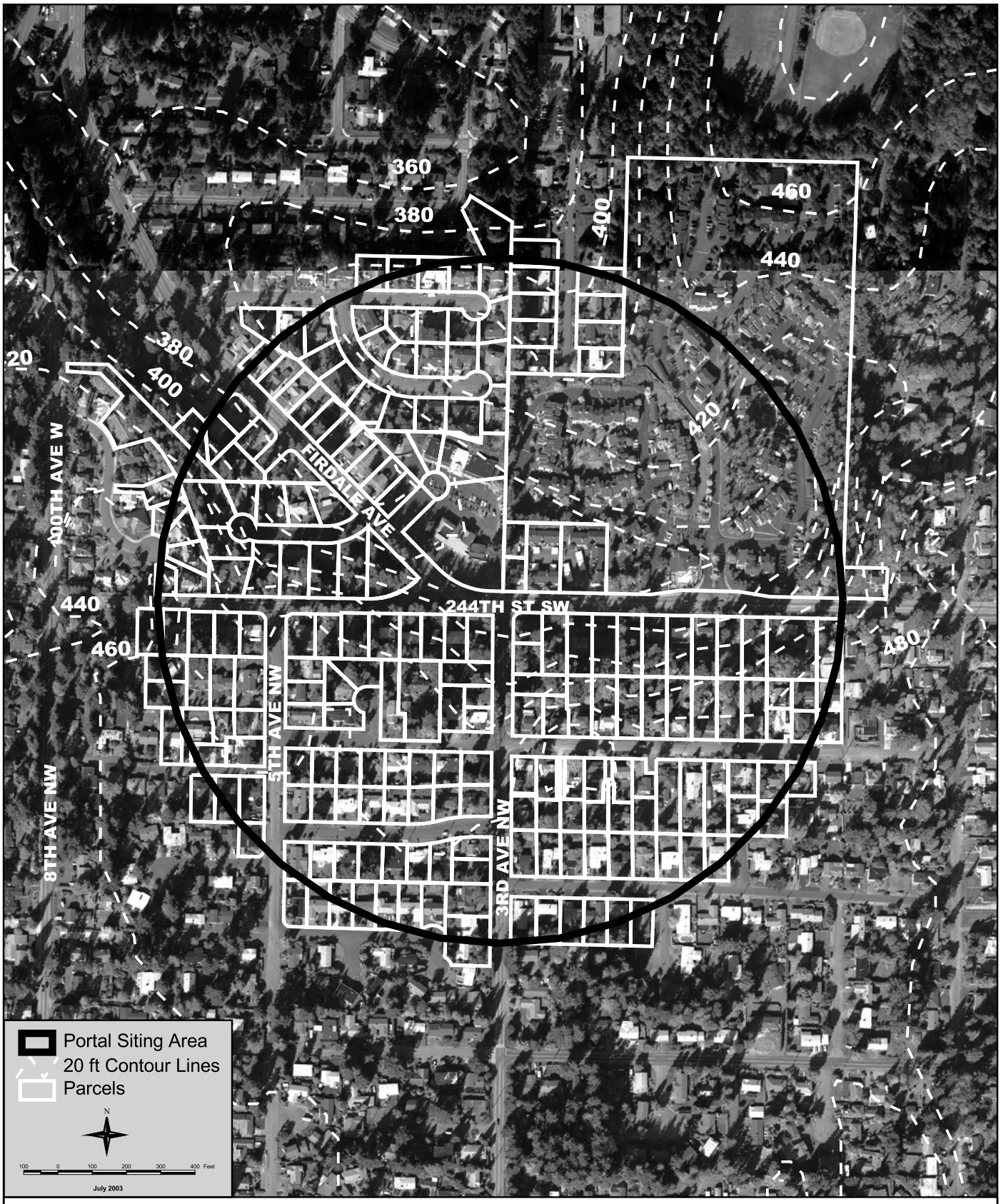

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Figure 1-11

Portal Siting Area 23

BRIGHTWATER REGIONAL WASTEWATER TREATMENT SYSTEM

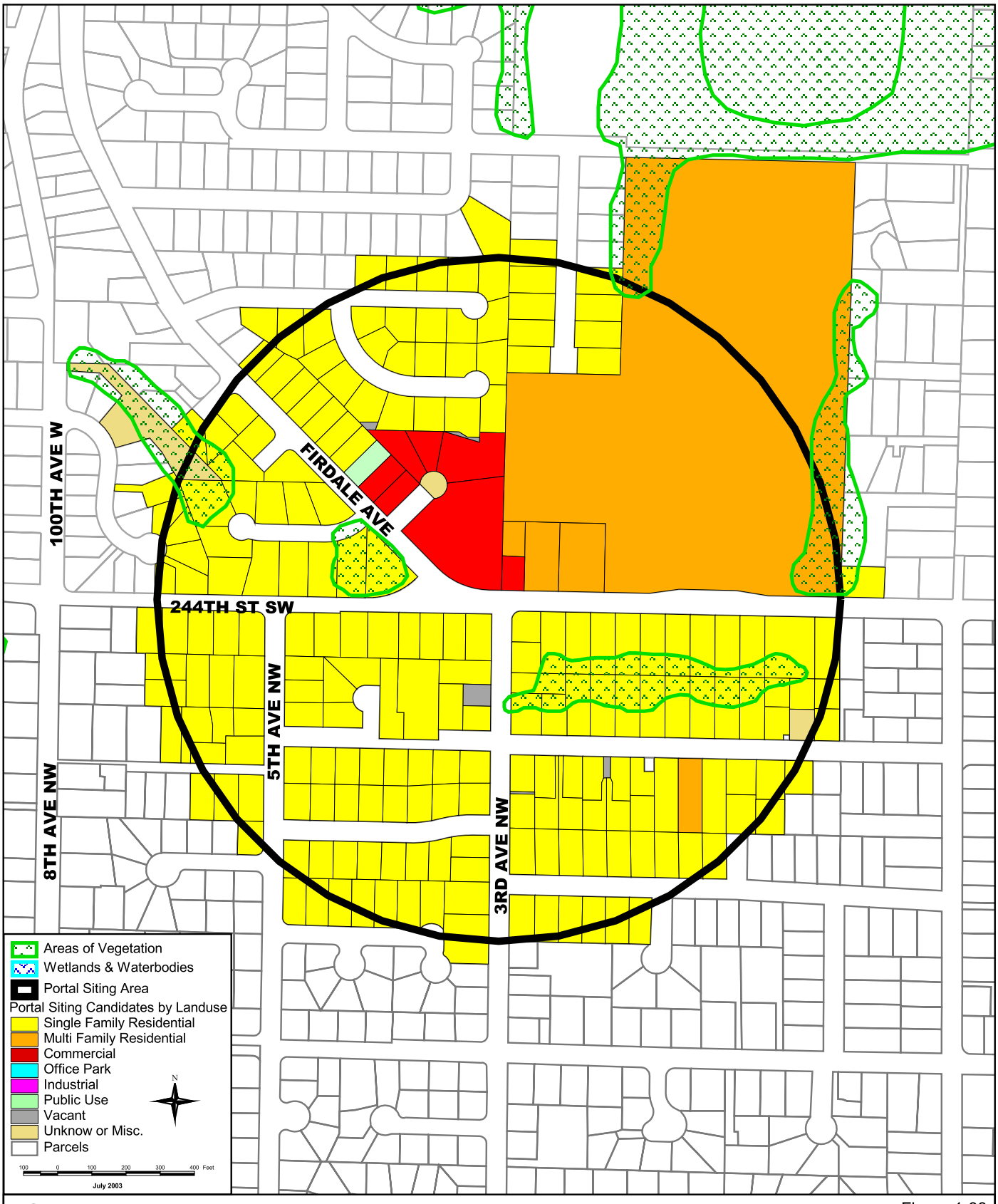

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Figure 1-33

Existing Land Use
Portal Siting Area 23

BRIGHTWATER REGIONAL
WASTEWATER TREATMENT SYSTEM

King County
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Figure 1-12

Portal Siting Area 24

BRIGHTWATER REGIONAL WASTEWATER TREATMENT SYSTEM

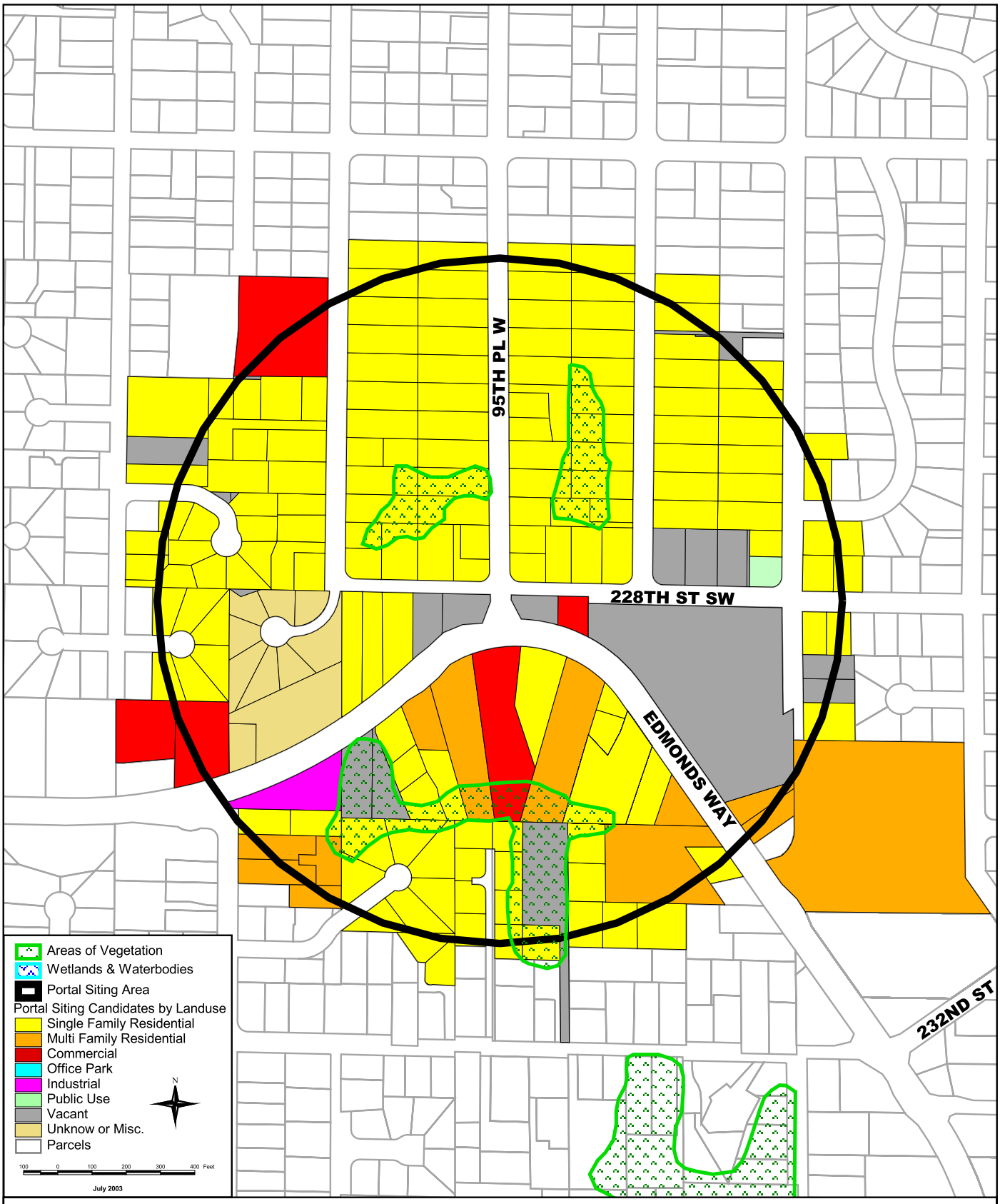

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Figure 1-34

Existing Land Use
Portal Siting Area 24

BRIGHTWATER REGIONAL
WASTEWATER TREATMENT SYSTEM

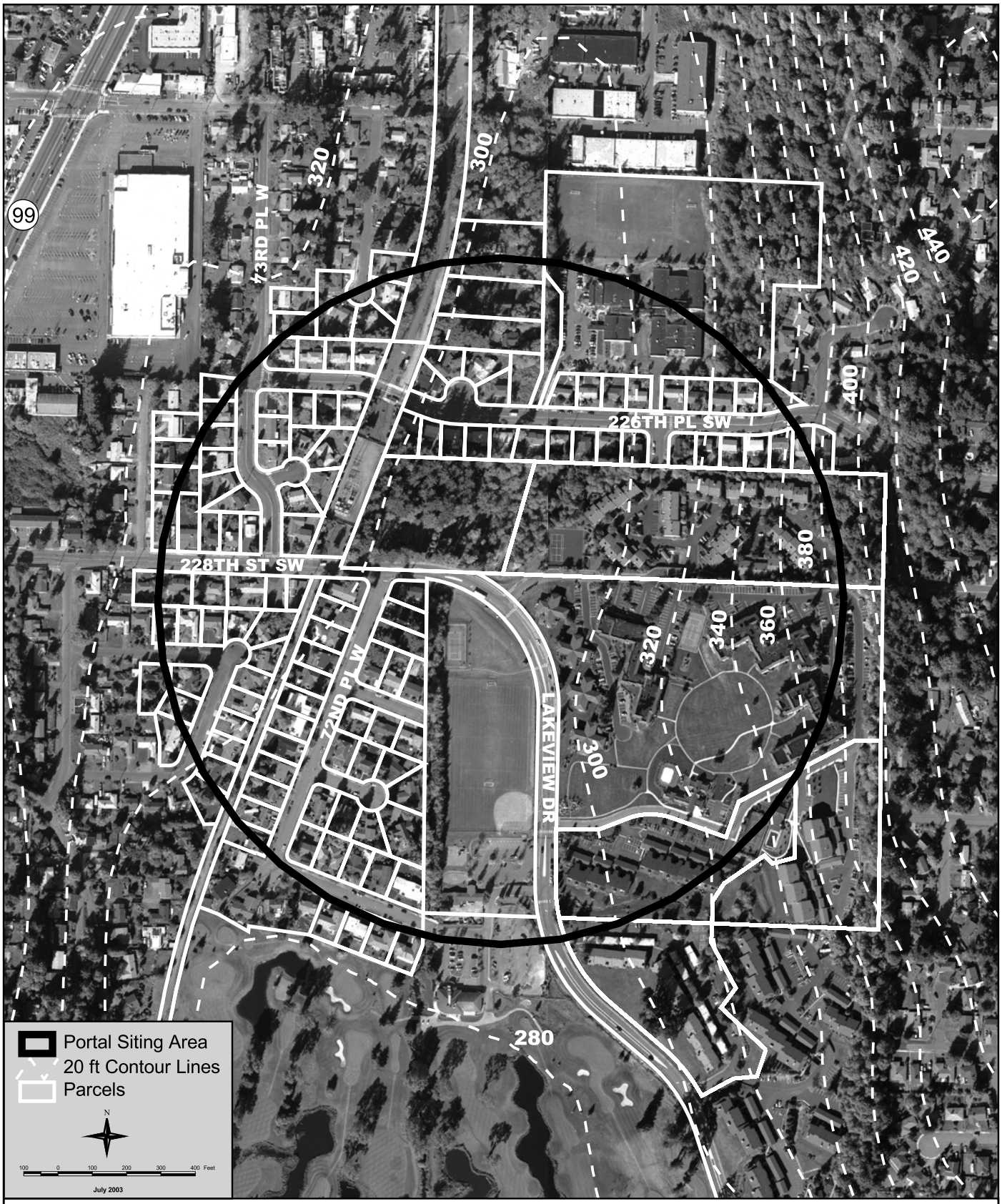

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Figure 1-13

Portal Siting Area 26

BRIGHTWATER REGIONAL WASTEWATER TREATMENT SYSTEM

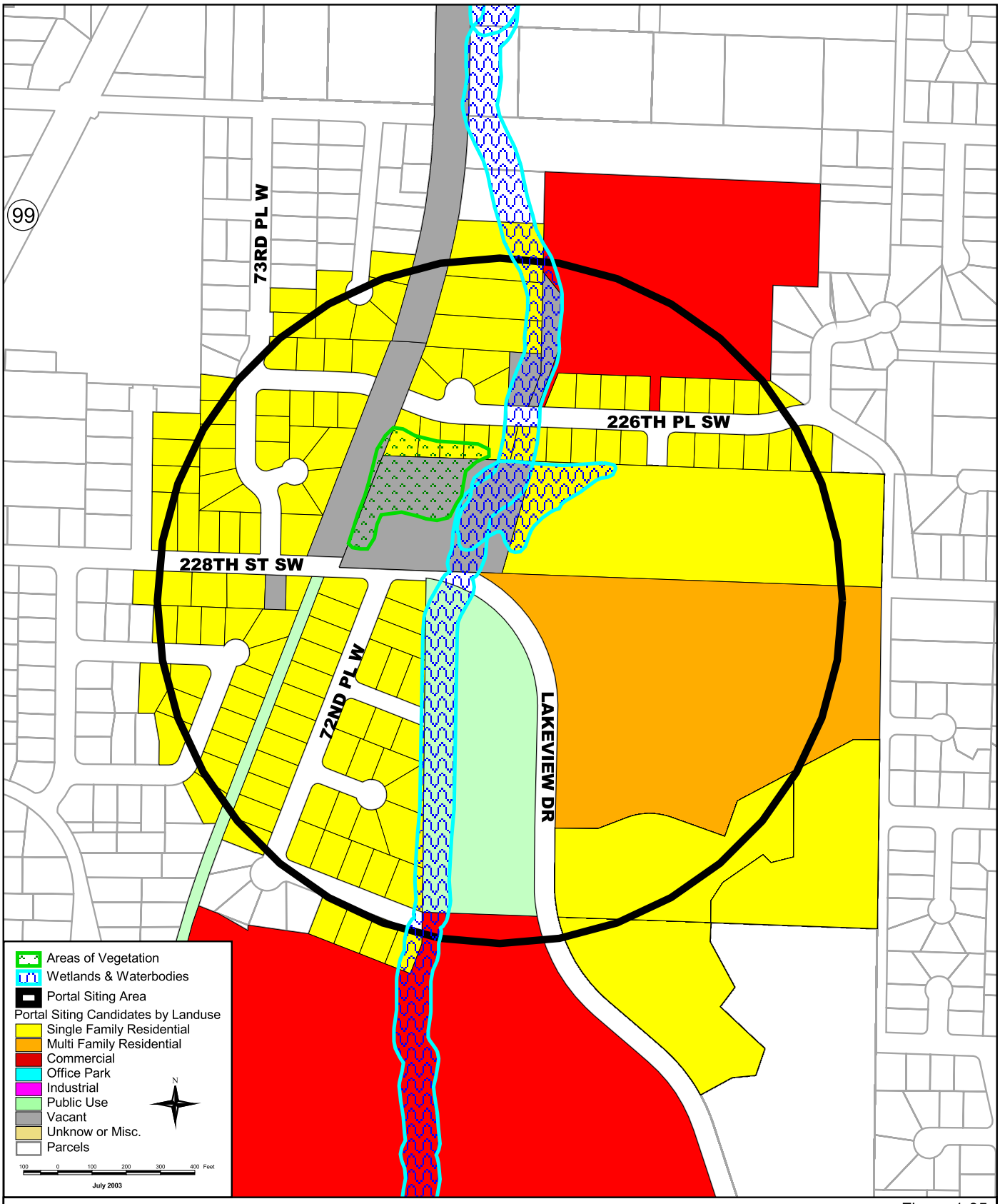

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Figure 1-35

Existing Land Use
Portal Siting Area 26

BRIGHTWATER REGIONAL
WASTEWATER TREATMENT SYSTEM

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Figure 1-14

Portal Siting Area 27

BRIGHTWATER REGIONAL WASTEWATER TREATMENT SYSTEM

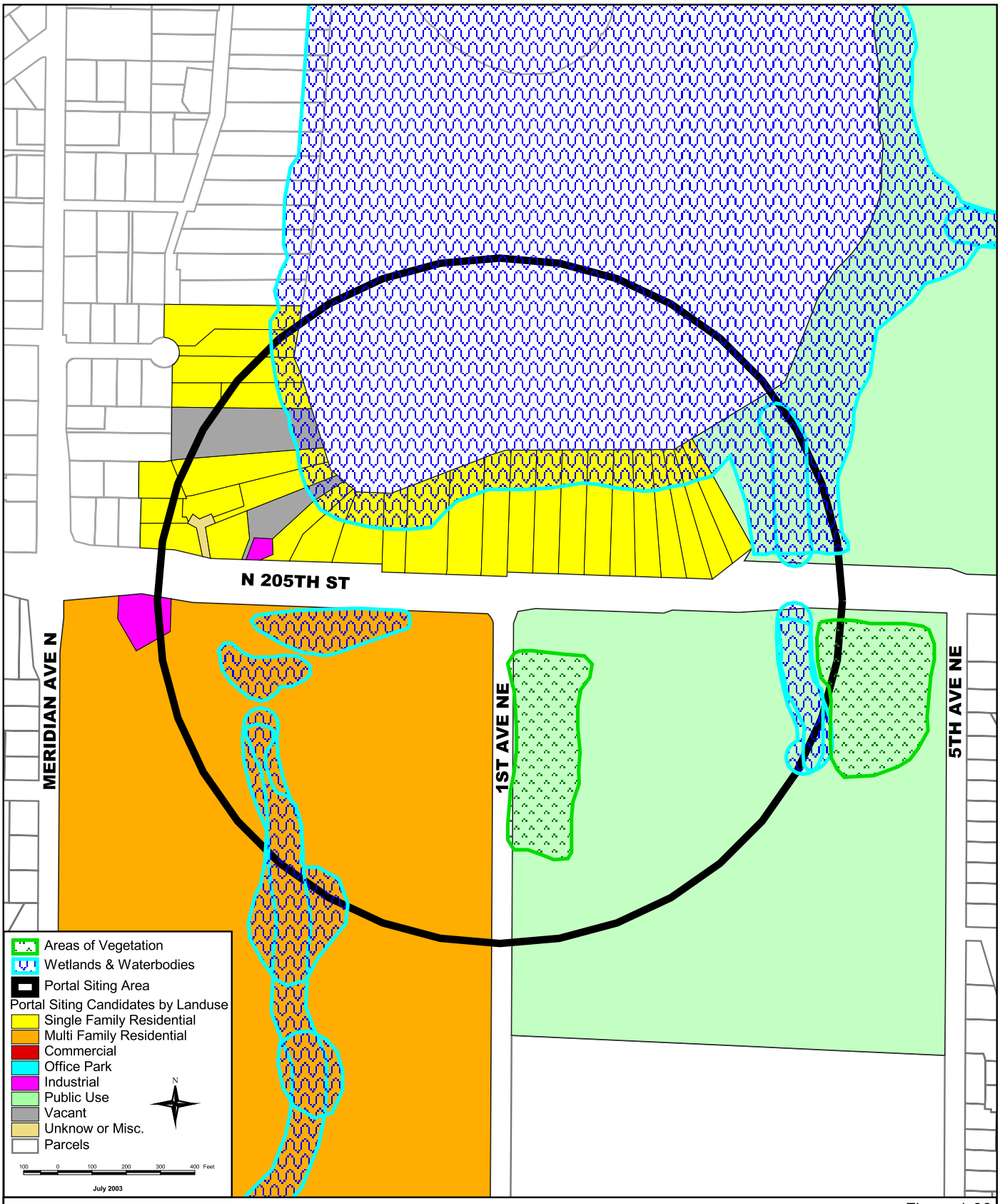

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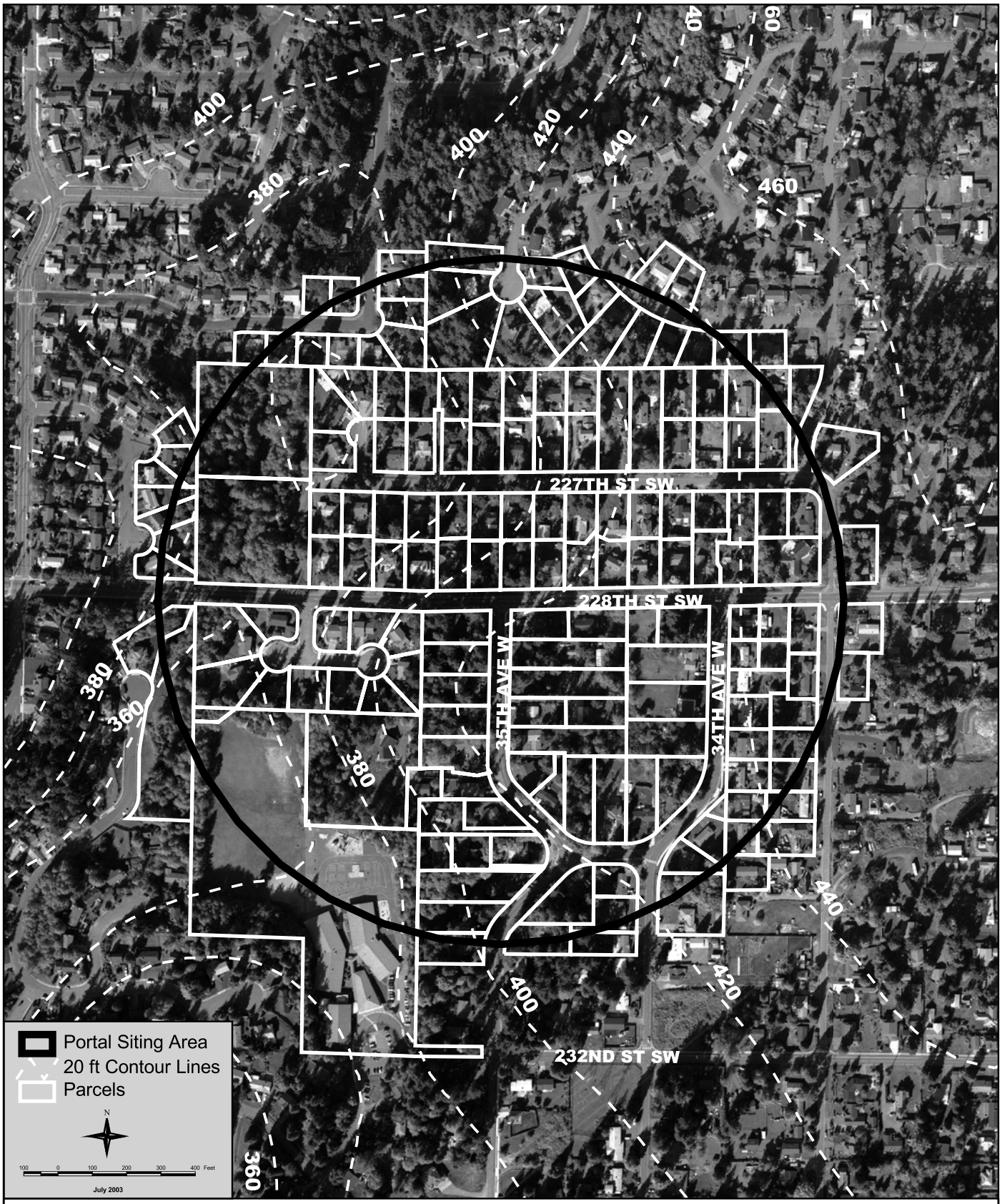
Figure 1-36

Existing Land Use
Portal Siting Area 27

BRIGHTWATER REGIONAL WASTEWATER TREATMENT SYSTEM



King County
Department of
Natural Resources and Parks
Wastewater Treatment Division

Data Source: King County

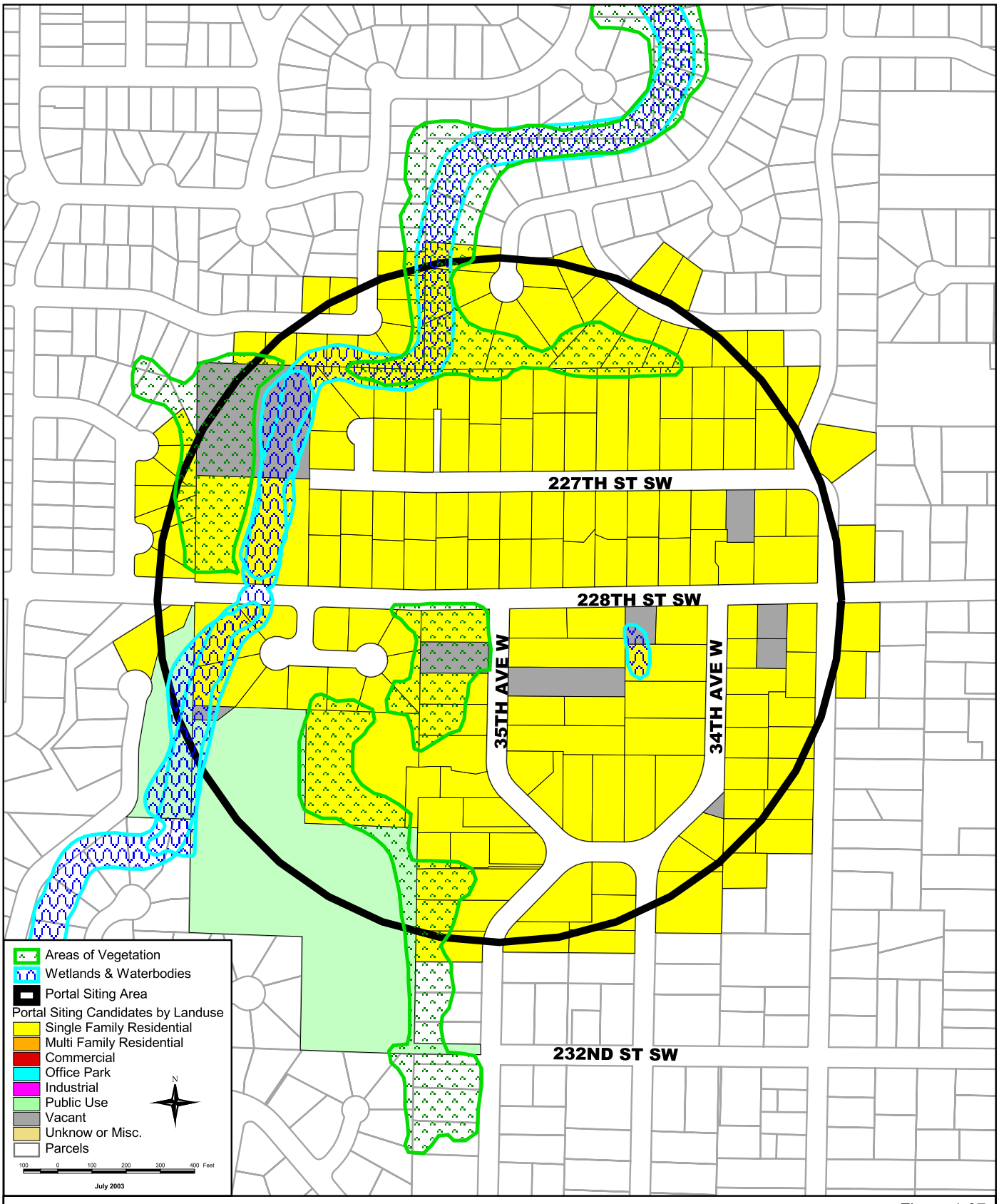
File Name: dnrp1:\\WTD\Projects\BW_FEIS\projects\portal_parcels_lev1.apr Shari Cross

Prepared by: King County WTD GIS

Figure 1-15

Portal Siting Area 30

BRIGHTWATER REGIONAL WASTEWATER TREATMENT SYSTEM



King County
Department of
Natural Resources and Parks
Wastewater Treatment
Division

Data Source: King County

File Name: dnrp1:\\WTD\Projects\BW_FEIS\projects\portal_parcels_lev1.apr Shari Cross

Prepared by: King County WTD GIS

Figure 1-37

Existing Land Use
Portal Siting Area 30

BRIGHTWATER REGIONAL WASTEWATER TREATMENT SYSTEM

King County
Department of
Natural Resources and Parks
Wastewater Treatment Division

Data Source: King County

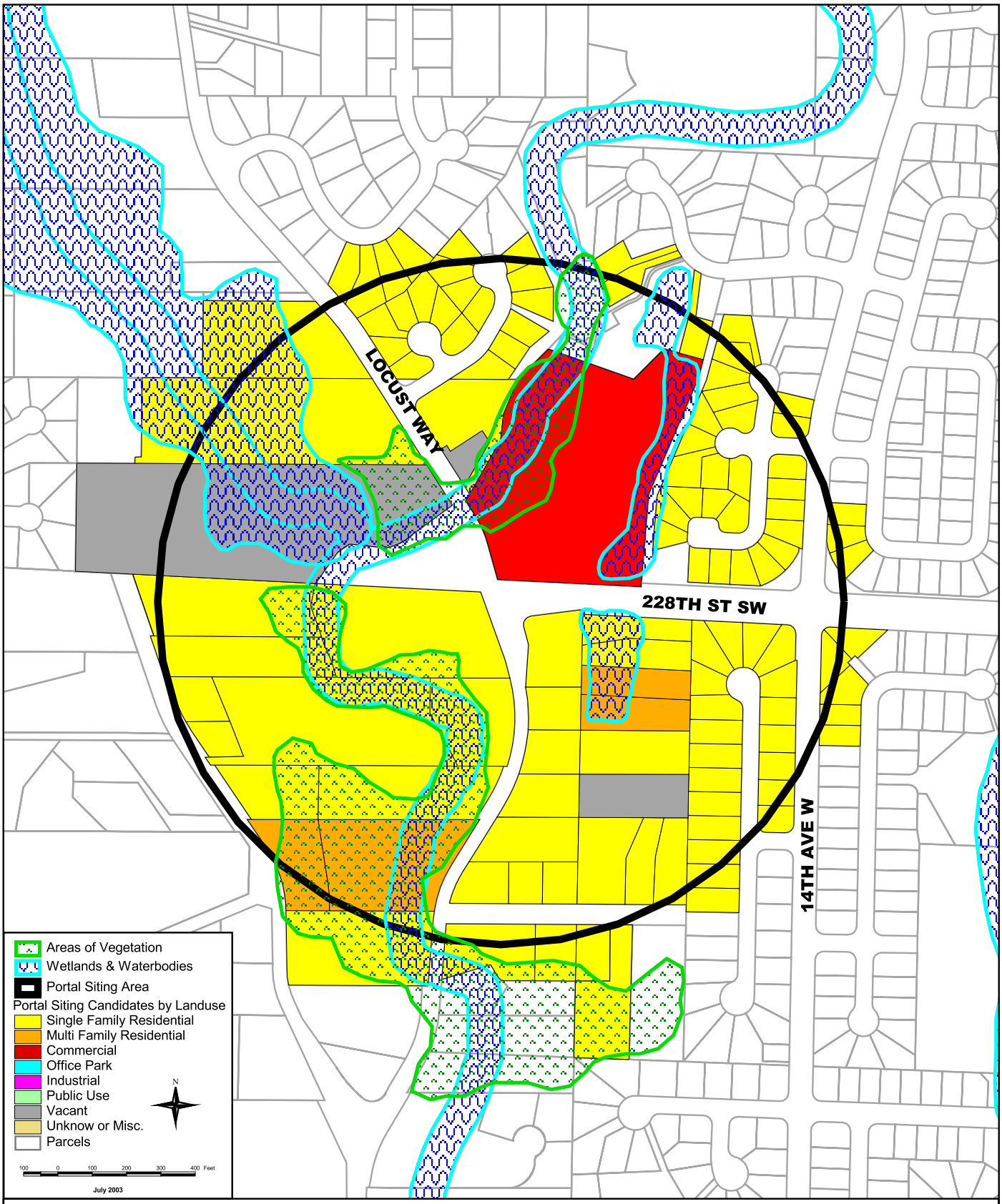
File Name: dnrp1:\\WTD\Projects\BW_FEIS\projects\portal_parcels_lev1.apr Shari Cross

Prepared by: King County WTD GIS

Figure 1-16

Portal Siting Area 33

BRIGHTWATER REGIONAL WASTEWATER TREATMENT SYSTEM



King County
Department of
Natural Resources and Parks
Wastewater Treatment
Division

Data Source: King County

File Name: dnrp1:\\WTD\Projects\BW_FEIS\projects\portal_parcels_lev1.apr Shari Cross

Prepared by: King County WTD GIS

Figure 1-38

Existing Land Use
Portal Siting Area 33

BRIGHTWATER REGIONAL
WASTEWATER TREATMENT SYSTEM

King County
Department of
Natural Resources and Parks
Wastewater Treatment Division

Data Source: King County

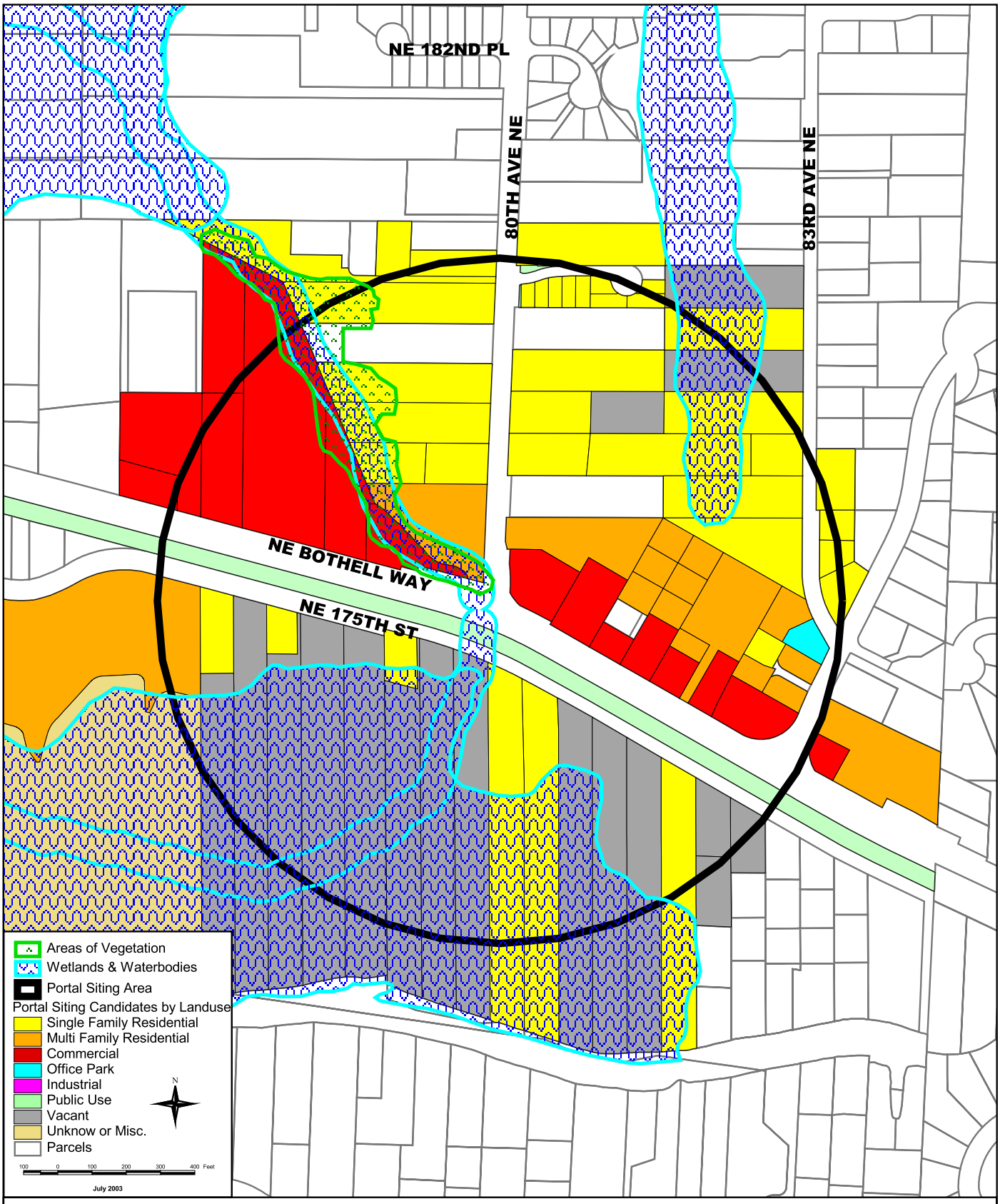
File Name: dnrp1:\\WTD\Projects\BW_FEIS\projects\portal_parcels_lev1.apr Shari Cross

Prepared by: King County WTD GIS

Figure 1-17

Portal Siting Area 34

BRIGHTWATER REGIONAL WASTEWATER TREATMENT SYSTEM



King County
Department of
Natural Resources and Parks
Wastewater Treatment
Division

Data Source: King County

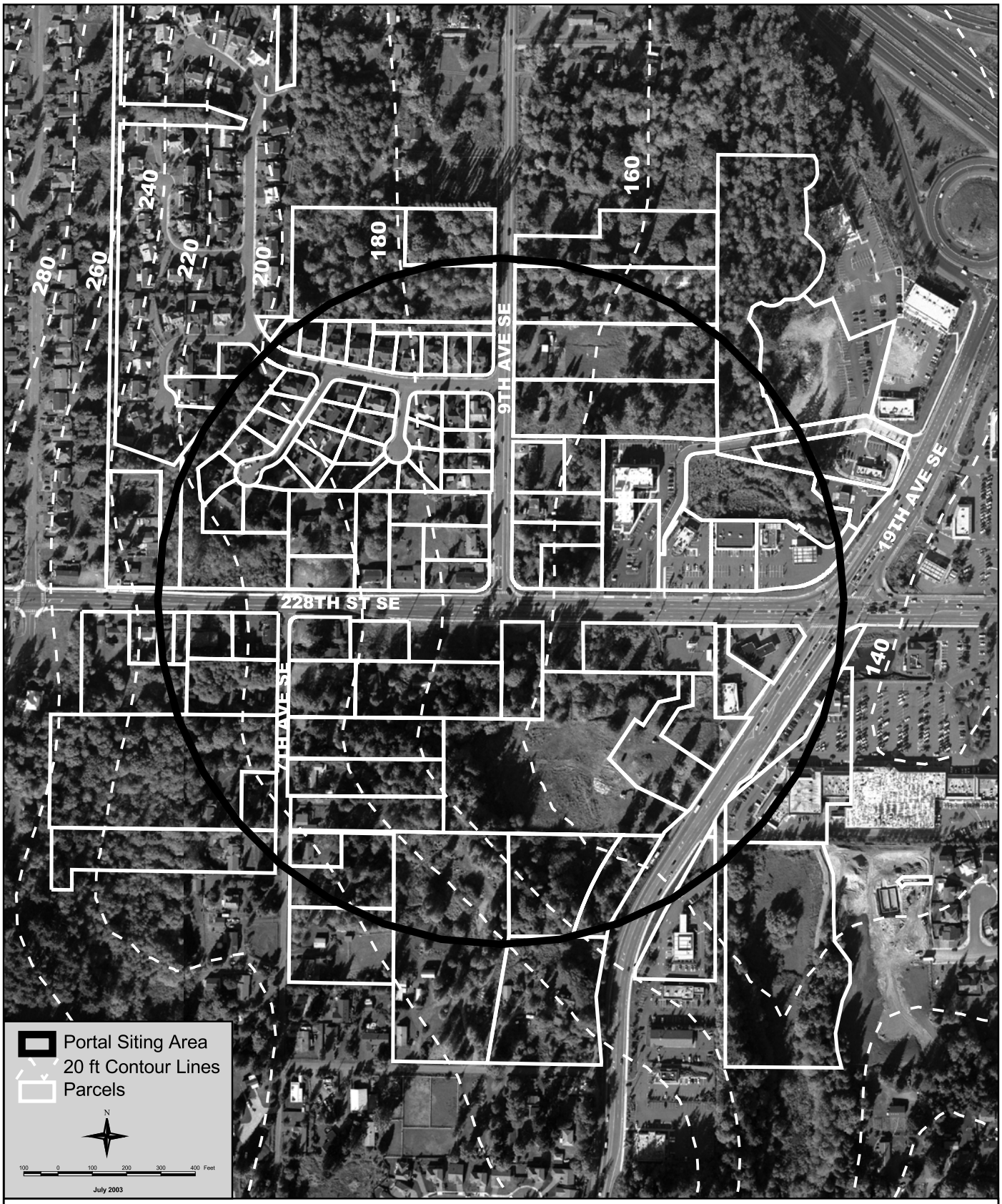
File Name: dnrp1:\\WTD\Projects\BW_FEIS\projects\portal_parcels_lev1.apr Shari Cross

Prepared by: King County WTD GIS

Figure 1-39

Existing Land Use
Portal Siting Area 34

BRIGHTWATER REGIONAL
WASTEWATER TREATMENT SYSTEM



King County
Department of
Natural Resources and Parks
Wastewater Treatment Division

Data Source: King County

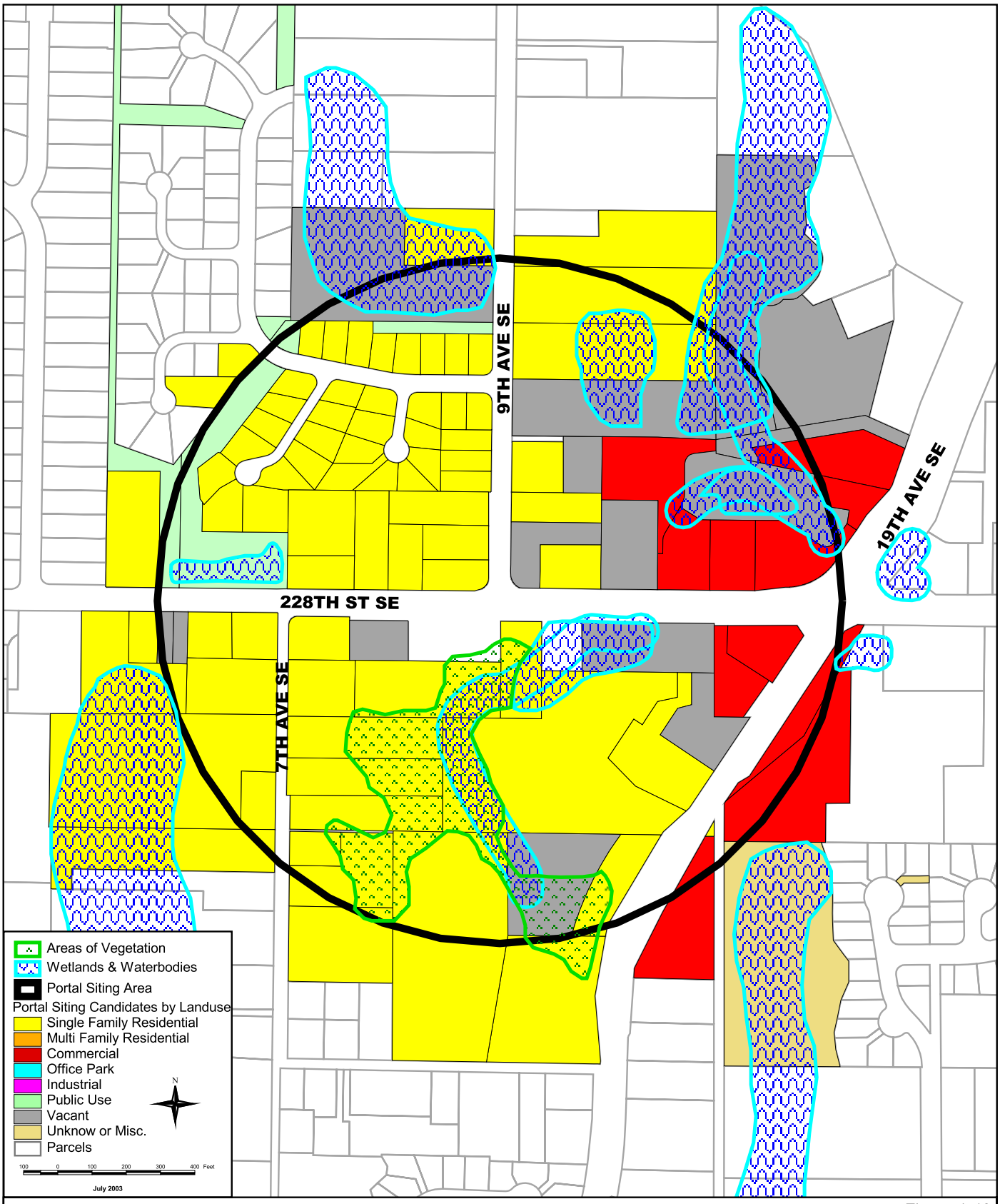
File Name: dnrp1:\\WTD\Projects\BW_FEIS\projects\portal_parcels_lev1.apr Shari Cross

Prepared by: King County WTD GIS

Figure 1-18

Portal Siting Area 37

BRIGHTWATER REGIONAL WASTEWATER TREATMENT SYSTEM



King County
Department of
Natural Resources and Parks
Wastewater Treatment
Division

Data Source: King County

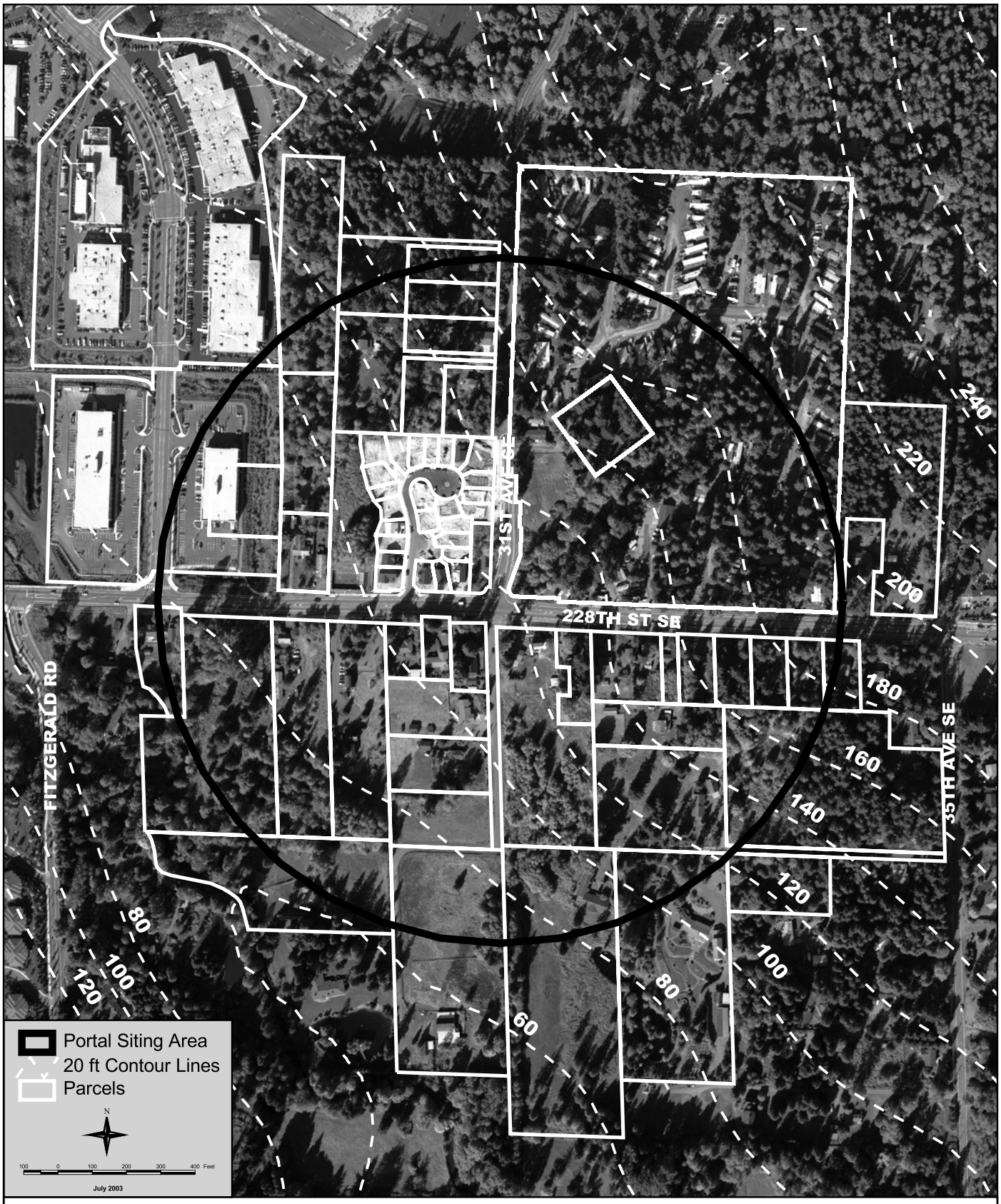
File Name: dnrp1:\\WTD\Projects\BW_FEIS\projects\portal_parcels_lev1.apr Shari Cross

Prepared by: King County WTD GIS

Figure 1-40

Existing Land Use
Portal Siting Area 37

BRIGHTWATER REGIONAL
WASTEWATER TREATMENT SYSTEM



King County
Department of
Natural Resources and Parks
Wastewater Treatment Division

Data Source: King County

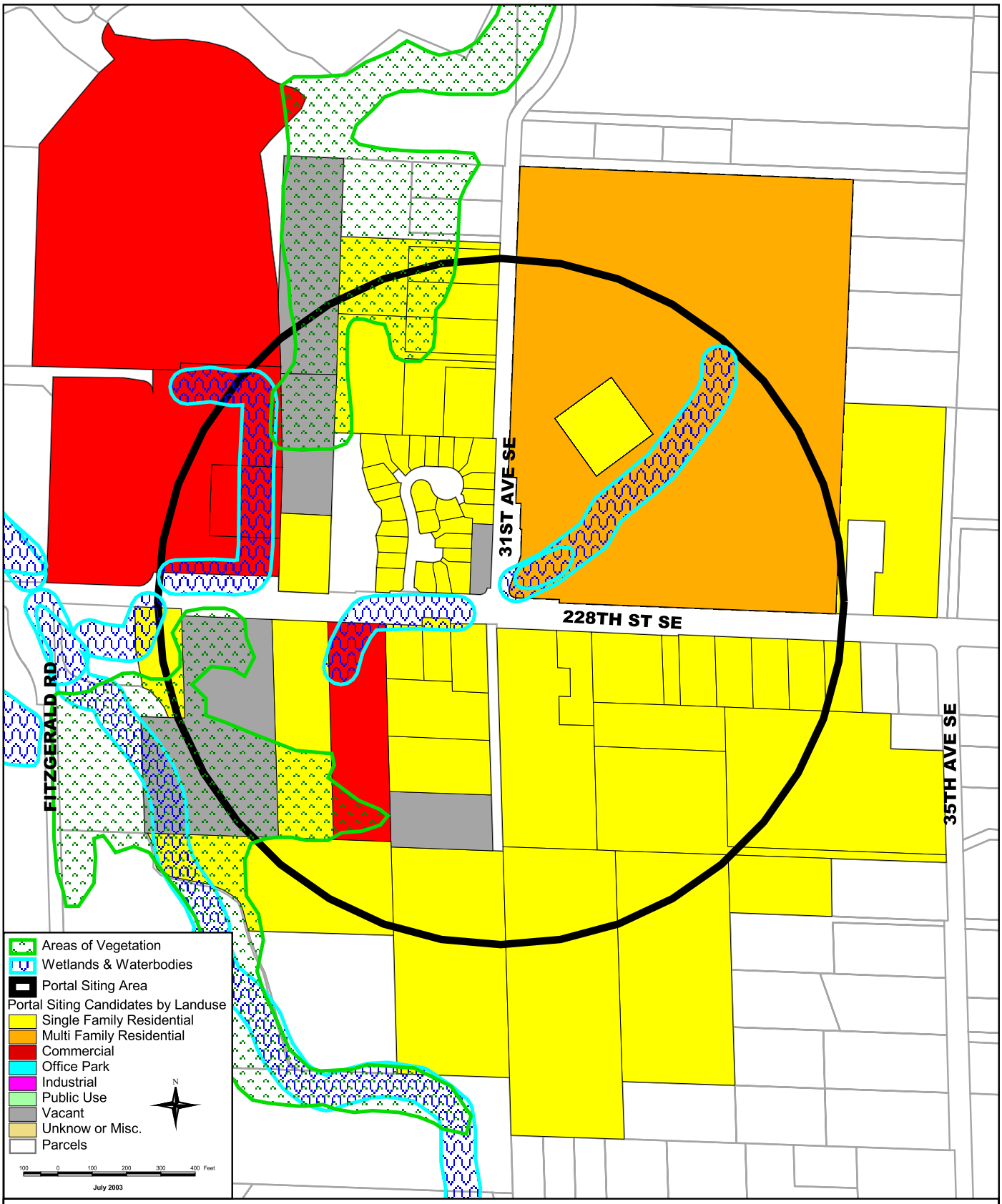
File Name: dnrp1:\\WTD\Projects\BW_FEIS\projects\portal_parcels_lev1.apr Shari Cross

Prepared by: King County WTD GIS

Figure 1-19

Portal Siting Area 39

BRIGHTWATER REGIONAL WASTEWATER TREATMENT SYSTEM



King County
Department of
Natural Resources and Parks
Wastewater Treatment
Division

Data Source: King County

File Name: dnrp1:\\WTD\Projects\BW_FEIS\projects\portal_parcels_lev1.apr Shari Cross

Prepared by: King County WTD GIS

Figure 1-41

Existing Land Use
Portal Siting Area 39

BRIGHTWATER REGIONAL
WASTEWATER TREATMENT SYSTEM

King County
Department of
Natural Resources and Parks
Wastewater Treatment Division

Data Source: King County

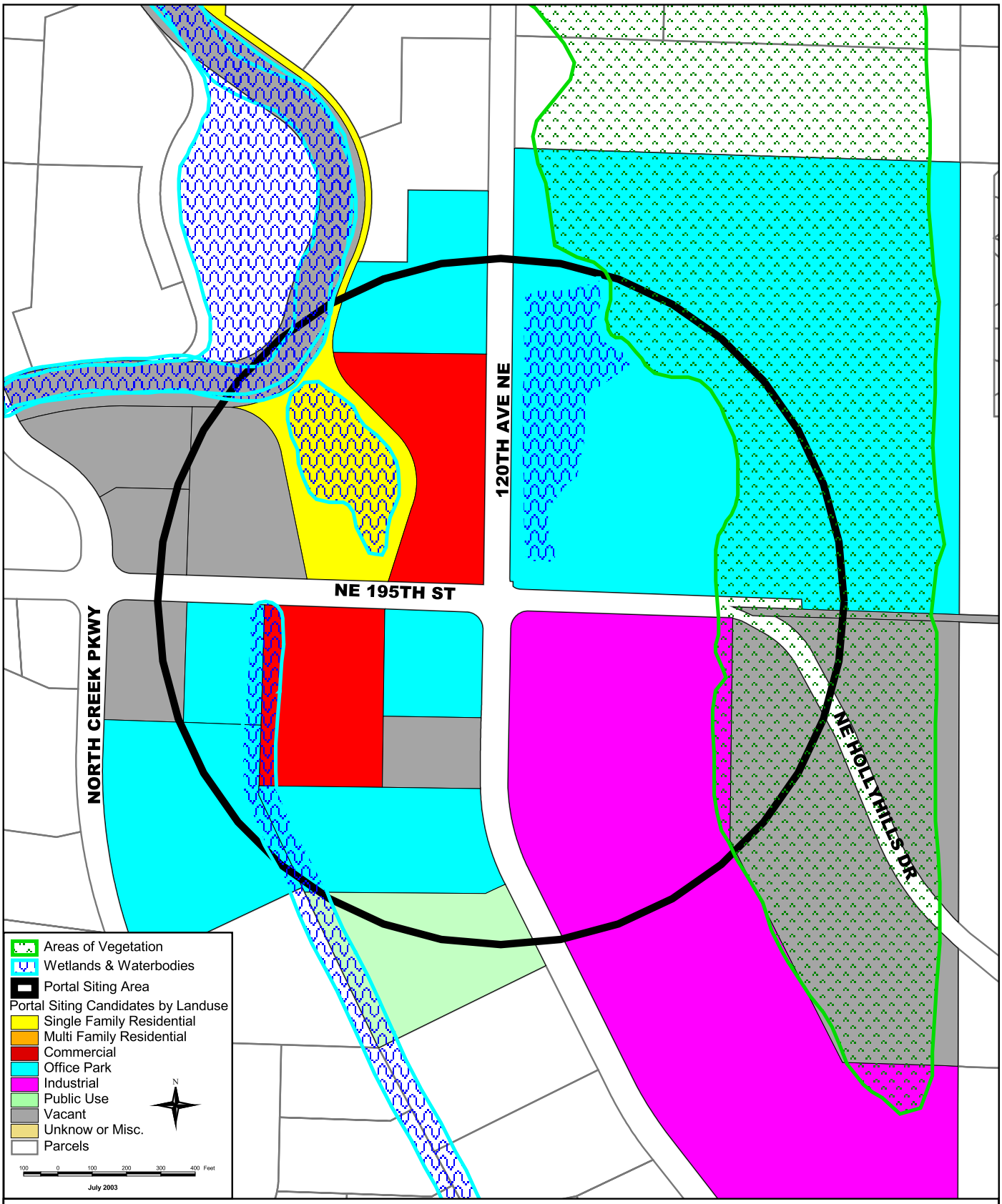
File Name: dnrp1:\\WTD\Projects\BW_FEIS\projects\portal_parcels_lev1.apr Shari Cross

Prepared by: King County WTD GIS

Figure 1-20

Portal Siting Area 41

BRIGHTWATER REGIONAL WASTEWATER TREATMENT SYSTEM



King County
Department of
Natural Resources and Parks
Wastewater Treatment
Division

Data Source: King County

File Name: dnrp1:\\WTD\Projects\BW_FEIS\projects\portal_parcels_lev1.apr Shari Cross

Prepared by: King County WTD GIS

Figure 1-42

Existing Land Use
Portal Siting Area 41

BRIGHTWATER REGIONAL
WASTEWATER TREATMENT SYSTEM

King County
Department of
Natural Resources and Parks
Wastewater Treatment Division

Data Source: King County

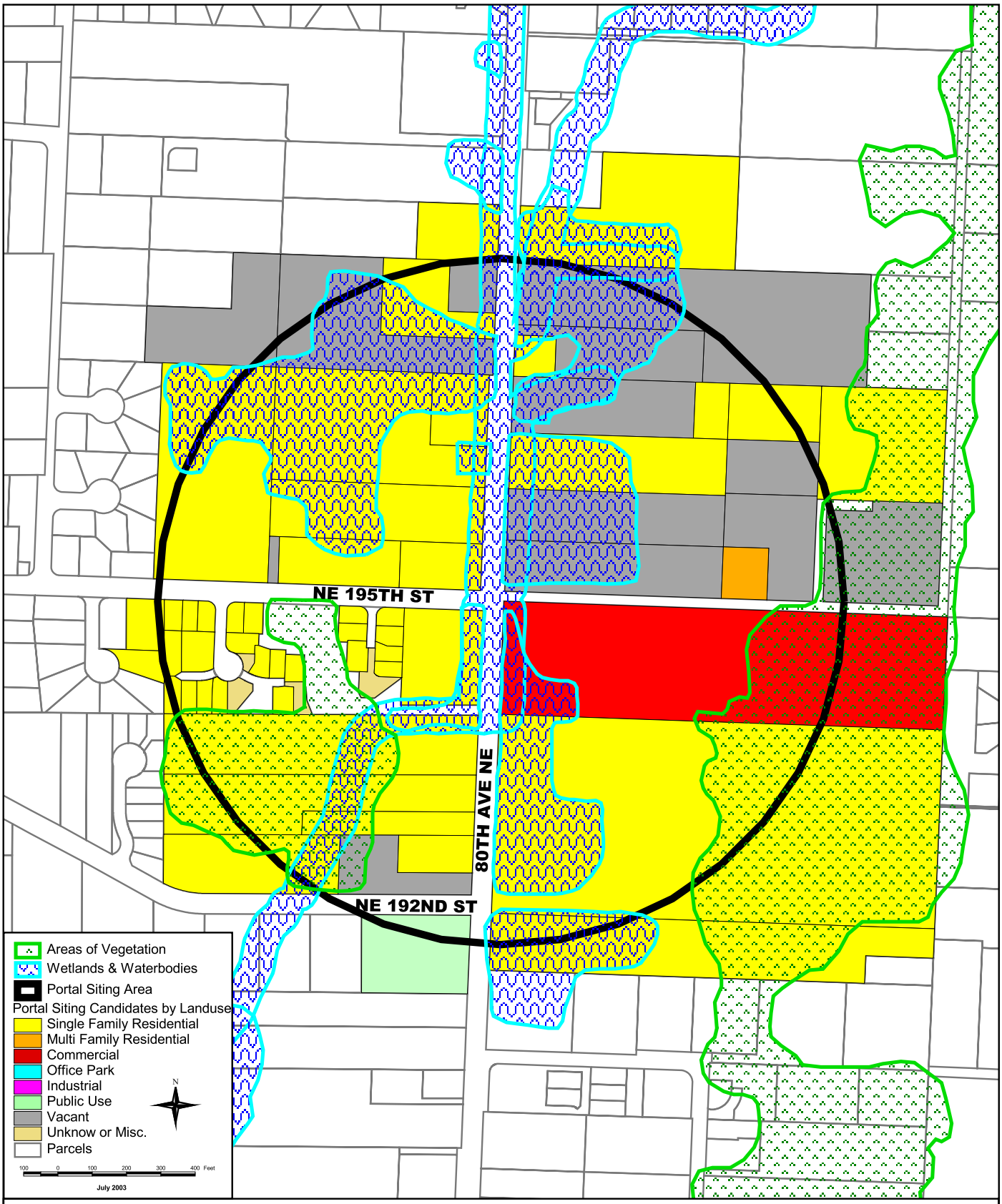
File Name: dnrp1:\\WTD\Projects\BW_FEIS\projects\portal_parcels_lev1.apr Shari Cross

Prepared by: King County WTD GIS

Figure 1-21

Portal Siting Area 44

BRIGHTWATER REGIONAL WASTEWATER TREATMENT SYSTEM



King County
Department of
Natural Resources and Parks
Wastewater Treatment
Division

Data Source: King County

File Name: dnrp1:\\WTD\Projects\BW_FEIS\projects\portal_parcels_lev1.apr Shari Cross

Prepared by: King County WTD GIS

Figure 1-43

Existing Land Use
Portal Siting Area 44

BRIGHTWATER REGIONAL
WASTEWATER TREATMENT SYSTEM

King County
Department of
Natural Resources and Parks
Wastewater Treatment Division

Data Source: King County

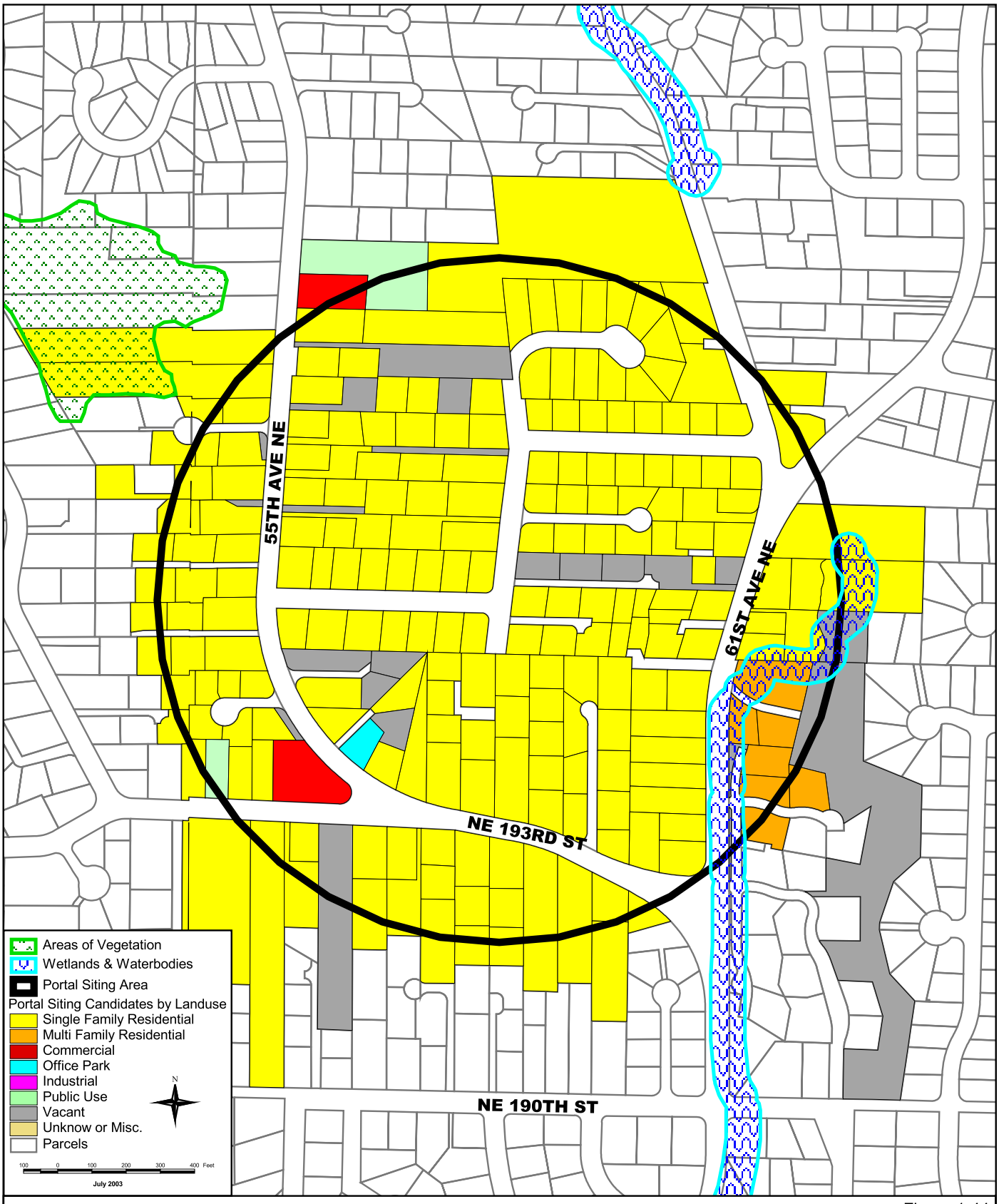
File Name: dnrp1:\\WTD\Projects\BW_FEIS\projects\portal_parcels_lev1.apr Shari Cross

Prepared by: King County WTD GIS

Figure 1-22

Portal Siting Area 45

BRIGHTWATER REGIONAL WASTEWATER TREATMENT SYSTEM



King County
Department of
Natural Resources and Parks
Wastewater Treatment
Division

Data Source: King County

File Name: dnrp1:\\WTD\Projects\BW_FEIS\projects\portal_parcels_lev1.apr Shari Cross

Prepared by: King County WTD GIS

Figure 1-44

Existing Land Use
Portal Siting Area 45

BRIGHTWATER REGIONAL
WASTEWATER TREATMENT SYSTEM

Attachment B

Meeting Minutes

Brightwater Conveyance Predesign Meeting Notes

King County Brightwater TREATMENT SYSTEM

Meeting Date: **December 19, 2002**
Time: **8:00 am – 4:00 pm**
Location: **Adolfson's Office**

Attendees:

Name	Agency/Company
Kent Hale	AAI
Jim Peterson	HDR
Laurie McCray	KC
Michelle Ramos	HWA
Kris Lepine	Herrera
Jan Rosholt	GSA
Sue Kaufman-Una	KC
Dave Wortman	AAI
Bob Peterson	KC
Kathi Thompson	Pharos
Shari Cross	KCWD
Edith Hadler	HDR
Dave Dittmar	KC
Molly Adolfson	AAI

Meeting Purpose:

1. Present Level 1 Portal Screening results for each portal area.
2. Identify potential sites for consideration in the Level 2 Portal Screening.

Agenda:

Item No. 1:

1. Process for identifying potential sites:
    - A. The goal is to identify 2-3 candidate locations within each portal area, then field check for reasonability.
    - B. Potential sites were identified by focusing on the following parcels:
        1. Vacant.
        2. Underdeveloped.
        3. Developed (not prioritized):
            - Publicly owned.
            - Commercial.
            - Residential.
    - C. The model run on candidate portal sites is scheduled for January 15, 2003.
    - D. Candidate sites outside the circle area were considered under the following circumstances:
        1. Areas requested for consideration by jurisdictions.

Item No. 2:
Portal 10 Area

Site	Portal 10
A.	Parcels 32, 36, 49,and 54.
	Parcel 54 is an undeveloped lot.
	Parcel 36 is currently for sale.
B.	Parcels 98, 102, 117, 119, 121, and 133.
	City plans to extend shopping area into parcels to the west
	Parcels 102 to 143 have buffer from rest of neighborhood and have some wetland.
C.	Lake Forest Park requested consideration of Animal Acres Park for a portal site. It is outside of the circle.
D.	Parcel 99 has a shopping center on the north corner. Parcel 80 is considered an industrial area. It has a new Windermere building.

Item No. 3:
Portal 11 Area

Site	Portal 11 - Kenmore
A.	Parcels 67, 69, and 70 are an underdeveloped boat storage area.
B.	Parcel 76 is an underdeveloped industrial parking lot and is currently a stalled development area.
C.	The area north of Bothell Way is challenging due to the need to make connection with existing sanitary sewer at Kenmore. Parcels 5 and 7 are parking lots and are underdeveloped.

Item No. 4:
Portal 34 Area

Site	Portal 34
A.	Parcels 28, 29, and 30 are held by a single owner and are underdeveloped.
B.	Parcels 61, 62, and 64 are mostly underdeveloped. Parcel 61 has a home on it.
C.	North of Parcels 55 and 56 is an underdeveloped horse pasture. Parcels 94 and 92.
D.	Parcel 3 is out of the circle. It is undeveloped and zoned vacant single family home.
	Parcels 88 – 90 along the river are in bad shape and not good for engineering. They are too close to wetland.
	Parcels 31 and 33 were considered but have inadequate area between wetland and road.

Item No. 5:
Portal 41 Area

Site	Portal 41
	Sites are being developed in the area.
A.	Parcels 6, 7, and 8 are vacant but currently being developed as part of larger development.
B.	Parcel 4 is a parking lot.
C.	Parcel 14 (north part) is an undeveloped grass area.
D.	Parcel 20 is a ball field.
E.	Parcels 13 and 17 (south part). Parcel 13 is a parking lot. Parcel 17 is vacant. These sites are undeveloped and underdeveloped.

Item No. 6:
Portal 44 Area

Site	Portal 44
A.	Parcels 11, 12, 14, and 15 are vacant land and are next to mobile home park.
B.	Parcels 20 and 21 are vacant, plus some area north. Access may be an issue.
C.	Parcel 4 is vacant.

Item No. 7:
Portal 45 Area

Site	Portal 45
	Mostly residential areas.
A.	Parcels 13 and 16. Parcel 16 is vacant. Parcels are held by one owner.
B.	Parcel 1 includes the west side.
C.	Parcels 14 and 25 are sloped 100 feet across sites.
D.	Parcels 241, 239, 240, and 238. Parcel 241 is vacant.
	Considered gas station and store but site is too small, and there is only one commercial site in the area.

Item No. 8:
Portal 7 Area

Site	Portal 7
A.	Parcel 2 is an unused school which is now City of Shoreline property (Aldercrest School).
B	Parcel 10 is County property with roads or transit.

Item No. 9:
Portal 27 Area

Site	Portal 27
A.	Parcel 31 is a golf course next to Lake Ballinger.
B.	Northwest corner of Parcel 36 is an unused portion of the cemetery.
C.	Parcels 15, 17, 18, and 32 are residences next to Lake Ballinger.

Item No. 10:
Portal 23 Area

Site	Portal 23 Firdale Village
A.	Firdale Village area.
B.	School site owned by Edmonds.
C.	Parcels 121, 124, 126, 141, 142, and 143 are vacant lots and developed areas. Drops 100 feet across parcel.
D.	Parcels 55, 56, 57,and 53 are single family residences.

Item No. 11:
Portal 22 Area (Combined with Portal 23 Area)

Site	Portal 22
E.	Parcels 157, 176, 174 are single family residences.

Item No. 12:
Portal 19 Area

Site	Portal 19
A.	Parcel 1 is a vacant lot.
B.	Parcel 6 is a vacant lot, which has an 80 foot drop across lot.
C.	Parcel 15 is the petroleum storage site.

Item No. 13:
Portal 39 Area

Site	Portal 39
A.	Parcels 29, 9, and 30 are unknown use. The residential area is shown as vacant.
B.	Parcels 20 and 21. Parcel 20 is single family residential. Parcel 21 is vacant.
C.	Parcel 14, back half of parcel.
D.	Parcels 16 and 17 are zoned single family residential. Parcel 16 is vacant.
E.	Parcels 15 and 43 are held by a single owner, residential.

Item No. 14:
Portal 37 Area

Site	Portal 37
A.	Parcel 83, 81 and 89 is single family residential. Parcels 81 and 89 are vacant.
B.	Parcels 87 and 86 are a lumber store.
C.	47, 97, 98 are residential. Parcel 97 is vacant.
D.	Parcels 44 and 45 are considered single family residential. Only the west half of the parcels is considered.

Item No. 15:
Portal 33 Area

Site	Portal 33
A.	Parcel 20 is vacant with 5 acres including some wetland area. Approximately 3.5 acres is buildable.
B.	Parcels 110 and 111. Parcel 111 is single family residential. Parcel 110 is vacant with access through easement.
C.	Parcel 21 has unknown use.
D.	Parcel 105 is part forested and is the low point in the area.

Item No. 16:
Portal 30 Area

Site	Portal 30
A.	Parcel 131 is a school park area owned by Edmonds School District. The west half of Parcel 141 is vacant.
B.	Parcels 16, 66, 67, 155, and 154 are large residential parcels. One is vacant.
C.	Parcels 17 and 18 are forested and flat.

Item No. 17:
Portal 26 Area

Site	Portal 26
A.	Parcel 138 is a Mount Lake Terrace Park.
B.	Parcel 120 is the golf course parking lot.
C.	The out-of-business commercial store is out of circle.
D.	Parcel 119 is a forested area.

Item No. 18:
Portal 24 Area

Site	Portal 24
A.	Parcels 52, 53, 49, 50, and 51 are vacant and being developed to single family homes.
B.	Parcels 98, 97, and 96 are vacant. Parcels 93 and 94 are single family residential.
C.	Parcels 60, 61, 62, 59, and 58. Parcels 59 and 58 include some forested area. Parcels 60, 61, and 62 are homes.

Item No. 19:
Portal 3 Area

Site	Parcel 3
D.	Parcels 107, 111, 112, 113, 114, and 12 are zoned single family homes. Parcel 107 is vacant.
E.	Parcels are in forested area.

Item No. 20:
Portal 14 Area

Site	Portal 14
A.	Parcel 19 is a ball field.
B.	Parcel 11 is a ball field.
C.	South end of Portal 1 is part lawn and part parking lot.
D.	Parcel 22 is south of the Home Depot parking lot.

Item No. 21:
Portal 13 Area

Site	Portal 13
A.	Parcels 129, 141, and 143 are gravel parking and vacant. They are owned by the City of Bothell.
B.	Parcel 142 and adjacent to the east is a metal shop.
C.	Parcels 140 and 128 are restaurant and a rental place.

Item No. 22:
Portal 5 Area

Site	Portal 5
A.	Parcel 67 is vacant.
B.	Parcels 118 and 110. Parcel 118 is a home. Parcel 110's back side is a storage area.
C.	Restaurant and vacant site. Parcels 91 and 101 are zoned vacant.

Item No. 23:
Portal 12 Area

Site	Portal 12
C.	Parcel 94 and 92 are farmland.
D.	Parcels 2 and 3.
E.	Parcel 58 is farmland. Parcel 59 is needed for access.

Brightwater Conveyance Predesign Meeting Notes

King County Brightwater TREATMENT SYSTEM

Meeting Date: **January 7, 2003**
Time: **10:30 AM**
Location: **Adolfson Associates**

Attendees:

Name	Agency/Company
Edith Hadler	HDR
Kris Lepine	Herrera
Molly Adolfson	AAI
Deron Lozano	AAI

Meeting Purpose:
The meeting purpose was to review the results of the field verification of the sites initially identified in the December Workshop for the Level 1 and level 2 portal screening.

Discussion Items:

1. Issues that need to be resolved for the portal screening process include the following:
   - Properties currently for sale.
   - Size of portal sites – Need to resolve process if sites are larger than 2 acres.
2. During the field investigations some sites that were originally shown on the zoning maps as vacant have been subsequently developed.
3. The following sites listed in Table 1 have been changed based on field observations.

Table 1 - Sites changed based on field observations

Portal	*Reason for Site Change*
19	The sites are large parcels some with wetlands present; therefore, the site areas were reduced.
23	Sites C and D are sloped and there is not enough space left for a portal site. Add the former Woodway High School site for portals 22 and 23.
24, 3	In site B only the field is suitable.
27	Site A is a poor shape so it was changed to a fairway adjacent. Sites B and C are challenging.
7	Site A was adjusted to a smaller size.
45	Sites A and B have a development proposed. Sites D and B wetlands and steep access. No changes were made to the sites.
44	Site A was moved to the back half of the parcel. Site C was adjusted to a smaller size due to wetlands and streams. Site D is an alternative horse pasture site.

Portal	***Reason for Site Change***
41	Sites E and B were developed and dropped from further consideration. Site A is paved. Site C is a park.
10	Sites A, B, and C have a stream and wetlands and have steep slopes.
11	Site B was adjusted to a smaller size.
34/12	Sites E and C are wet pasturelands. Add in an alternative site F including a bingo and video store. Sites A and B contain wetlands and were combined to have sufficient area. Site D was developed and dropped from further consideration.
26	Site B has access through a parking lot.
14	Smaller areas were selected for sites C and D.
37	Site D was shifted to the south. Site A was adjusted to a smaller size.
39	Sites E, C, and B were adjusted to a smaller size. Site A was developed and dropped from further consideration.
33	Site A was adjusted to a smaller size.
30	Site A was adjusted to a smaller size.

Brightwater Conveyance Predesign Meeting Notes

King County Brightwater TREATMENT SYSTEM

Meeting Date: January 15, 2003
Time:
Location: HDR

Attendees:

Name	Agency/Company
Edith Hadler	HDR
Pierre Kwan	HDR
Jim Peterson	HDR
David Dittmar	KC
David Freed	KC
Sue Kaufman-Una	KC
Laurie McCray	KC
Bob Peterson	KC
Erika Peterson	KC
Michael Popiwny	KC
Gunars Sreibers	KC
Rodrick Boyd	KC-WTD
Verna Bromley	KC-PAO
Shari Cross	KC-WTD
William Wilbert	KCWTD
Molly Adolfson	AAI
Taylor Washburn	Foster, Pepper
Dan Speicher	CH2M Hill
Kathi Thompson	PHAROS
Michelle Ramos	HWA
Jan Rosholt	GSA
Kris Lepine	Herrera
Brad Hoff	EnviroIssues

Meeting Purpose:

1. Present initial modeling results for the Level 2 Portal Screening.
2. Gather additional information from workshop participants to add or delete potential sites.
3. Identify any policy issues associated with screening process and potential sites.

Discussion Items:

A. Key Factors were presented, and the following changes were proposed:
   1. Make impacts of groundwater/surface water disposal a key factor in Environmental.
   2. Entire site was considered when answering questions/impacts regarding site size.
   3. Keep local traffic access in Environmental, but make it a key factor.

B. Explanation was given to describe the screening levels.

1. In documentation, make the screening criteria between Level 1 and Level 2 clear. Include the rationale for criteria and answers to questions needed.
2. Level 2 is the Candidate Screening level and would be included in the Final EIS.
3. Level 3 is the Final Screening level.

C. The model results and weighting were presented.

1. Environmental: .364 Reflects risk/uncertainty of permitting.
2. Land: .364 Reflects time of acquisition.
3. Engineering: .23

D. Portal 11

Site	*Area*	*Current Use*	*Jurisdiction*
A	2+	Retail/office	Kenmore
B	39	Warehouse/parking lot	Kenmore

E. Portal 34/12

Site	*Area*	*Current Use*	*Jurisdiction*
C		Wet pasture	
E		Horse pasture	
A		Vacant with Single Family	
F		Commercial site was recommended by City. Revaluate F. Package Portal Sites 12 and 13 separately.	

F. Portal 34

1. Site E is out of the evaluation.
2. Sites A and F are in the evaluation.

G. Portal 12

Include Sites C and E.

H. Portal 10

Site	*Area*	*Current Use*	*Jurisdiction*
A		Single Family	LFP (Lake Forest Park)
C	3.8	Vacant Single Family	LFP
D	16.8	Shopping	LFP

Notes:
1. Assume microtunnel pits and portals.
2. Check buildable area on Site A to see if can reduce number of parcels.
3. Site C was suggested by City.
4. Site D work with property owner for location during acquisition.
5. Site B too small with new wetland information.
6. Site E can also be considered as an alternative.

I. Portal 22/23

Site	*Area*	*Current Use*	*Jurisdiction*
A	8	Mix retail	Edmonds
D	2?	Single Family	Edmonds
E	4+	Single Family	Shoreline
F		Surplus school	Edmonds (out of circle)

Notes: 1. Sites C, D are in the evaluation; Site F is out of the screening.

J. Portal 19

Site	*Area*	*Current Use*	*Jurisdiction*
A	1.9	Undeveloped/residential	Woodway
C	6.5	Chevron - refinery	Snohomish City
E		Richmond Beach PS	Shoreline

K. Portal 7

Site	*Area*	*Current Use*	*Jurisdiction*
A	16.2	School	Shoreline - work with landowner for 1-2 acres.
B	2.9	Utility	Shoreline - Shoreline asked us to look at Park - will do.

L. Portal 27

Site	*Area*	*Current Use*	*Jurisdiction*
A	112	Open space	MLT
B	37	Mortuary	Shoreline
C	2+	Single Family	Edmonds

Notes: 1. Site A - CUP, Shorelines Permit
2. Site A - Work with landowner to identify portal location within the property.

M. Portal 41

Site	*Area*	*Current Use*	*Jurisdiction*
A	3.22	Vacant Industrial	
C	5.5	Heavy Industrial	(Seattle Times)
D	4.5	Vacant Industrial Ball field	Bothell

N. Portal 44

Site	*Area*	*Current Use*	*Jurisdiction*
B	7+	Vacant Single Family	Has wetlands
C	6	Vacant Single Family	
D	10+	For sale - horse ranch with homes	

Notes: 1. Evaluate new Site E.

O. Portal 45

Site	*Area*	*Current Use*	*Jurisdiction*
A	2	Single Family Residential	Biggest parcels 90+ ft, least residences.
C	3+	Single Family Residential	Buffered
D	3+	Single Family Residential	

P. Portal 39

Site	*Area*	*Current Use*	*Jurisdiction*
B	7	Undeveloped and Single Family	Bothell
C	3.4	Single Family	Bothell
D	2.1	Single Family /Vacant	Bothell

Q. Portal 37

Site	*Area*	*Current Use*	*Jurisdiction*
C	1.41	Single Family/Vacant	Bothell - big house
A	8+	Undeveloped/Single Family/Vacant	
D	4	Single Family - big house	

Notes: 1. Check if Site A is being developed. (retail development)

R. Portal 33

Site	*Area*	*Current Use*	*Jurisdiction*
A		Undeveloped/vacant	BRIER
C		Wrecking yard	Snohomish City - proposed rezone 11 duplexes
D		Single Family	Snohomish City - check it

S. Portal 13

Site	*Area*	*Current Use*	*Jurisdiction*
A		Parking lot	
C		Businesses	
B		Business/body shop/light industrial	

T. Portal 14

Site	*Area*	*Current Use*	*Jurisdiction*
A		Ball field	
B		Ball field	
D		Vacant lot	

U. Portal 24

Site	*Area*	*Current Use*	*Jurisdiction*
A		Residential/proposed rezone/gas station-carwash	Edmonds - finished lots
B		Church overflow parking	
C		Undeveloped, vacant and SF, adjacent to power station.	

V. Portal 3

Site	*Area*	*Current Use*	*Jurisdiction*
D		Single Family	
E		Single Family	

Notes: 1. Look at forested lots F

W. Portal 5

Site	*Area*	*Current Use*	*Jurisdiction*
A	4.8	Vacant MLT	
B		Commercial	
C		Commercial and vacant.	

Notes: 1. Add Portal 5 to preferred alignment.
2. Revise B, and take out Parcel 175.
3. Add Site D.

X. Portal 30

Site	*Area*	*Current Use*	*Jurisdiction*
B	2+	Single Family /Vacant	BRIER
A	11	School and vacant	BRIER
C	4.9	Single Family/Vacant	

Notes: 1. Reduce Site B by two lower parcels (29 and 30).
2. Revise Site A size.

Y. Portal 26

Site	*Area*	*Current Use*	*Jurisdiction*
A	6.6	Playground/Ball field	MLT
D	4-5	Single Family	MLT
C	8.9	Commercial	Edmonds

Notes: 1. Verify buildable land on Site D and reduce number of houses if possible.

Action Items:

Portal Area	Site Actions
10	Remove Site B cue to size constraints with wetlands onsite. Add new Site E for evaluation.
19	Make C larger to include Parking Lot across the street. Remove Sites D and B. Site D is out of the circle. Site B ranked to lowest levels streams and access. Add new Site E for evaluation.
22/23	Remove Sites F and B because they are out of the portal circle areas.
27	Enlarge Site A if needed.
7	Add Site C Bruggers Bog Park for evaluation.
45	Remove Site B. Because of wetlands and steep access it scored lowest.
44	Remove Sites B and A. Site B is out of the circle. Site A ranked lowest in the model run for Portal 44. Add new Site E.
41	Remove Sites B and E because they are recently developed sites.
12/34	Keep Site E in analysis. Remove Site D because it is a recently developed site. Re-evaluate Site F.
33	Remove Site B because it scored lowest rank in model run for Portal 33. Make Site C larger to accommodate Portal construction.
37	Remove Site B because it scored lowest rank.
39	Remove Site A because it is a recently developed site. Remove Site E because it is equivalent to D and both are wet pasture areas. Site D is closer to alignment.
5	Make Site B smaller. Add Site D for evaluation.
3/24	Add new Site F for evaluation.
26	Verify Buildable size of Site D and remove extra homes if possible. Remove Site B because it has land acquisition challenges.
30	Make Site B smaller.
14	Remove Site C because it is out of the circle area.

Attachment C

Level 2 Portal Screening Process
Candidate Sites

Appendix C : Level - 2 Portal Screening Process Candidate Sites

Portals	Site	Size (Acres)	Current Use	Jurisdiction
Portal 3				
Totals - site C				
3	D	0.5	111 Single Family Residence - Detached	EDMONDS
3	D	0.0	910 Undeveloped (Vacant) Land	EDMONDS
3	D	0.6	910 Undeveloped (Vacant) Land	EDMONDS
3	D	0.3	111 Single Family Residence - Detached	EDMONDS
3	D	0.2	111 Single Family Residence - Detached	EDMONDS
3	D	0.3	111 Single Family Residence - Detached	EDMONDS
Totals - site D		**1.9**		
3	E	0.5	111 Single Family Residence - Detached	EDMONDS
3	E	0.2	111 Single Family Residence - Detached	EDMONDS
3	E	0.5	111 Single Family Residence - Detached	EDMONDS
3	E	0.2	111 Single Family Residence - Detached	EDMONDS
3	E	0.3	651 Medical & Other Health Services	EDMONDS
3	E	0.5	822 Animal Husbandry & Veterinary Services	EDMONDS
Totals - site E		**2.3**		
3	F	2.0	111 Single Family Residence - Detached	EDMONDS
Totals - site F		**2.0**		
Portal 5				
5	B	3.3	Service Building	Shoreline
5	X1	0.3	Service Building	Shoreline
5	X2	0.7	Service Building	Shoreline
Totals - site X		**1.0**		
5	G	1.8	Service Building	Shoreline
Totals - site X		**1.8**		
Portal 7				
7	A	9.0	School(Public)	Shoreline
Totals - site A		**9.0**		
7	B	2.9	Utility - Public	Shoreline
Totals - site B		**2.9**		
7	C	4.5	Park - Public (Zoo/Arbor)	Shoreline
Totals - site C		**4.5**		
Portal 10				
10	A	1.2	Single Family(Res Use/Zone)	Lake Forest Park
10	A	2.3	Single Family(Res Use/Zone)	Lake Forest Park
10	A	1.0	Single Family(Res Use/Zone)	Lake Forest Park
10	A	1.0	Vacant(Single-family)	Lake Forest Park
Totals - site A		**5.6**		
10	B [1]			
Totals - site B				
10	C	3.8	Vacant(Single-family)	Lake Forest Park
Totals - site C		**3.8**		
10	D	4.0	Shopping Ctr(Community)	Lake Forest Park
Totals - site D		**4.0**		
10	E	0.362	Single Family(Res Use/Zone)	Lake Forest Park
10	E	0.519	Single Family(Res Use/Zone)	Lake Forest Park
10	E	0.790	Single Family(Res Use/Zone)	Lake Forest Park
Totals - site E		**1.671**		
Portal 11				
11	A	1.1	Retail Store	Kenmore
11	A	0.7	Office Building	Kenmore
11	A	0.6	Retail Store	Kenmore
Totals - site A		**2.3**		
11	B	4.3	Warehouse	Kenmore
Totals - site B		**4.3**		
11	C	1.6	Grocery Store	Kenmore
11	C	2.5	Shopping Ctr(Nghbrhood)	Kenmore
Totals - site C		**4.1**		
Portal 12				
12	C	2.0	Single Family(Res Use/Zone)	Kenmore
12	C	1.1	Vacant(Single-family)	Kenmore
Totals - site C		**3.1**		

[1] This site did not meet the criteria for a candidate site in Level 2 screening

Portals	Site	Size (Acres)	Current Use	Jurisdiction
12	E	2.1	Single Family(Res Use/Zone)	Kenmore
Totals - site E		**2.1**		
Portal 13				
13	A	1.7	Vacant(Commercial)	Bothell
13	A	0.2	Vacant(Commercial)	Bothell
13	A	0.1	Vacant(Commercial)	Bothell
Totals - site A		**2.0**		
13	B	1.8	Industrial (General Purpose)	Bothell
13	B	1.3	Industrial (Light)	Bothell
Totals - site B		**3.0**		
13	C	1.9	Retail Store	Bothell
13	C	0.9	Restaurant(Fast Food)	Bothell
Totals - site C		**2.7**		
Portal 14				
14	A	4.0	Baseball/softball field	Bothell
Totals - site A		**4.0**		
14	B	3.7	Baseball/softball field	Bothell
Totals - site B		**3.7**		
14	C [1]			
Totals - site C				
14	D	3.2	Undeveloped/vacant land	Bothell
Totals - site D		**3.2**		
Portal 19				
19	A	1.9	910 Undeveloped (Vacant) Land	WOODWAY
Totals - site A		**1.9**		
19	B [1]			
Totals - site B				
19	C	8.5	291 Petroleum Storage and asphalt operation	EDMONDS
Totals - site C		**8.5**		
19	D [1]			
Totals - site D				
19	E	3.4	Utility - Public	Shoreline
Totals - site E		**3.4**		
Portal 22				
22	C	0.35	Single Family(Res Use/Zone)	Shoreline
22	C	0.22	Vacant(Single-family)	Shoreline
22	C	0.48	Vacant(Single-family)	Shoreline
22	C	0.49	Single Family(Res Use/Zone)	Shoreline
22	C	1.38	Single Family(Res Use/Zone)	Shoreline
22	C	0.35	Single Family(Res Use/Zone)	Shoreline
Totals - site C		**3.3**		
22	D	0.2	111 Single Family Residence - Detached	EDMONDS
22	D	0.2	111 Single Family Residence - Detached	EDMONDS
22	D	0.2	111 Single Family Residence - Detached	EDMONDS
22	D	0.2	111 Single Family Residence - Detached	EDMONDS
22	D	0.3	111 Single Family Residence - Detached	EDMONDS
22	D	0.2	111 Single Family Residence - Detached	EDMONDS
22	D	0.2	111 Single Family Residence - Detached	EDMONDS
22	D	0.2	111 Single Family Residence - Detached	EDMONDS
22	D	0.2	111 Single Family Residence - Detached	EDMONDS
22	D	0.2	111 Single Family Residence - Detached	EDMONDS
Totals - site D		**2.2**		
22	E	1.4	Single Family(Res Use/Zone)	Shoreline
22	E	1.0	Single Family(Res Use/Zone)	Shoreline
Totals - site E		**2.4**		
22	F	0.2	Single Family(Res Use/Zone)	Shoreline
22	F	0.2	Single Family(Res Use/Zone)	Shoreline
22	F	0.2	Single Family(Res Use/Zone)	Shoreline
22	F	0.2	Single Family(Res Use/Zone)	Shoreline
22	F	0.3	Single Family(Res Use/Zone)	Shoreline
22	F	0.3	Single Family(Res Use/Zone)	Shoreline
Totals - site F		**1.5**		
Portal 23				
23	A	0.2	549 Other Retail Trade - Food NEC	EDMONDS
23	A	0.2	539 Other Retail Trade NEC	EDMONDS

[1] This site did not meet the criteria for a candidate site in Level 2 screening

Portals	Site	Size (Acres)	Current Use	Jurisdiction
23	A	0.6	549 Other Retail Trade - Food NEC	EDMONDS
23	A	0.2	539 Other Retail Trade NEC	EDMONDS
23	A	0.3	549 Other Retail Trade - Food NEC	EDMONDS
23	A	0.0	910 Undeveloped (Vacant) Land	EDMONDS
23	A	1.6	549 Other Retail Trade - Food NEC	EDMONDS
23	A	0.2	659 Other Professional Services NEC	EDMONDS
Totals - site A		**3.1**		
23	B [1]			
Totals - site C				
23	D	0.2	111 Single Family Residence - Detached	EDMONDS
23	D	0.2	111 Single Family Residence - Detached	EDMONDS
23	D	0.2	111 Single Family Residence - Detached	EDMONDS
23	D	0.2	111 Single Family Residence - Detached	EDMONDS
23	D	0.3	111 Single Family Residence - Detached	EDMONDS
23	D	0.2	111 Single Family Residence - Detached	EDMONDS
23	D	0.2	111 Single Family Residence - Detached	EDMONDS
23	D	0.2	111 Single Family Residence - Detached	EDMONDS
23	D	0.2	111 Single Family Residence - Detached	EDMONDS
23	D	0.2	111 Single Family Residence - Detached	EDMONDS
Totals - site D		**2.2**		
22	F	0.2	Single Family(Res Use/Zone)	Shoreline
22	F	0.2	Single Family(Res Use/Zone)	Shoreline
22	F	0.2	Single Family(Res Use/Zone)	Shoreline
22	F	0.2	Single Family(Res Use/Zone)	Shoreline
22	F	0.3	Single Family(Res Use/Zone)	Shoreline
22	F	0.3	Single Family(Res Use/Zone)	Shoreline
Totals - site F		**1.5**		
Portal 24				
24	A	0.27	Undeveloped Single Family Residence	EDMONDS
24	A	0.25	Undeveloped Single Family Residence	EDMONDS
24	A	0.20	Undeveloped Single Family Residence	EDMONDS
24	A	0.38	Undeveloped Single Family Residence	EDMONDS
24	A	0.23	Undeveloped Single Family Residence	EDMONDS
24	A	1.10	Undeveloped Single Family Residence	EDMONDS
Totals - site A		**2.44**		
24	B	0.2	111 Single Family Residence - Detached	EDMONDS
24	B	0.2	691 Religious Activities (Churches Synagogues	EDMONDS
24	B	0.0	910 Undeveloped (Vacant) Land	EDMONDS
24	B	0.3	910 Undeveloped (Vacant) Land	EDMONDS
24	B	0.4	910 Undeveloped (Vacant) Land	EDMONDS
24	B	0.4	910 Undeveloped (Vacant) Land	EDMONDS
24	B	0.4	111 Single Family Residence - Detached	EDMONDS
24	B	0.4	111 Single Family Residence - Detached	EDMONDS
Totals - site B		**2.1**		
24	C	0.3	111 Single Family Residence - Detached	EDMONDS
24	C	0.3	121 Two Family Resident (Duplex)	EDMONDS
24	C	0.5	910 Undeveloped (Vacant) Land	EDMONDS
24	C	0.4	910 Undeveloped (Vacant) Land	EDMONDS
24	C	0.3	111 Single Family Residence - Detached	EDMONDS
24	C	0.2	111 Single Family Residence - Detached	EDMONDS
24	C	0.3	111 Single Family Residence - Detached	EDMONDS
Totals - site C		**2.2**		
Portal 26				
26	A	3.0	742 Playgrounds & Athletic Areas	MOUNTLAKE TERRACE
Totals - site A		**3.0**		
26	B [1]			
Totals - site B				
26	C	8.9	531 Department Stores	EDMONDS
Totals - site C		**8.9**		
26	D	0.2	111 Single Family Residence - Detached	MOUNTLAKE TERRACE
26	D	0.2	111 Single Family Residence - Detached	MOUNTLAKE TERRACE

[1] This site did not meet the criteria for a candidate site in Level 2 screening

Portals	Site	Size (Acres)	Current Use	Jurisdiction
26	D	0.2	111 Single Family Residence - Detached	MOUNTLAKE TERRACE
26	D	0.2	111 Single Family Residence - Detached	MOUNTLAKE TERRACE
26	D	0.2	111 Single Family Residence - Detached	MOUNTLAKE TERRACE
26	D	3.5	111 Single Family Residence - Detached	MOUNTLAKE TERRACE
Totals - site D		**4.4**		
Portal 27				
27	A	7.2	940 Open Space General RCW 84.34	MOUNTLAKE TERRACE
Totals - site A		**7.2**		
27	B	2.9	Mortuary/Cemetery/Crematory	Shoreline
Totals - site B		**2.9**		
27	C	0.6	111 Single Family Residence - Detached	EDMONDS
27	C	0.2	111 Single Family Residence - Detached	EDMONDS
27	C	0.4	111 Single Family Residence - Detached	EDMONDS
27	C	1.3	910 Undeveloped (Vacant) Land	EDMONDS
Totals - site C		**2.6**		
Portal 30				
30	A	0.1	910 Undeveloped (Vacant) Land	BRIER
30	A	2.4	681 Nursery, Primary & Secondary School	BRIER
Totals - site A		**2.5**		
30	B	0.3	111 Single Family Residence - Detached	BRIER
30	B	0.4	111 Single Family Residence - Detached	BRIER
30	B	0.7	114 Manufactured Home (Owned Site)	BRIER
30	B	0.7	910 Undeveloped (Vacant) Land	BRIER
Totals - site B		**2.0**		
30	C	2.4	111 Single Family Residence - Detached	BRIER
30	C	2.5	910 Undeveloped (Vacant) Land	BRIER
Totals - site C		**4.9**		
Portal 33				
33	A	2.7	111 Single Family Residence - Detached	BRIER
Totals - site A		**2.7**		
33	B [1]			
Totals - site B				
33	C	3.0	829 Other Agricultural Related Activities NEC	SNOHOMISH COUNTY
Totals - site C		**3.0**		
33	D	3.0	111 Single Family Residence - Detached	SNOHOMISH COUNTY
Totals - site D		**3.0**		
Portal 34				
34	A/B	0.6	Vacant(Single-family)	Kenmore
34	A/B	0.6	Vacant(Single-family)	Kenmore
34	A/B	0.5	Single Family(Res Use/Zone)	Kenmore
34	A/B	0.5	Vacant(Single-family)	Kenmore
Totals - site A		**2.1**		
34	D [1]			
Totals - site D				
34	F	2.30	Shopping Center	Kenmore
34	F	0.14	Parking(Assoc)	Kenmore
34	F	0.87	Retail Store	Kenmore
34	F	0.49	Retail Store	Kenmore
Totals - site F		**3.8**		
Portal 37				
37	A	2.7	111 Single Family Residence - Detached	BOTHELL
Totals - site A		**2.7**		
37	B [1]			
Totals - site B				
37	C	0.53	111 Single Family Residence - Detached	BOTHELL
37	C	0.64	910 Undeveloped (Vacant) Land	BOTHELL
37	C	0.52	111 Single Family Residence - Detached	BOTHELL
Totals - site C		**1.68**		

[1] This site did not meet the criteria for a candidate site in Level 2 screening

Portals	Site	Size (Acres)	Current Use	Jurisdiction
37	D	2.24	111 Single Family Residence - Detached	BOTHELL
37	D	2.26	111 Single Family Residence - Detached	BOTHELL
Totals - site D		**4.50**		
Portal 39				
39	A [1]			
Totals - site A				
39	B	1.1	111 Single Family Residence - Detached	BOTHELL
39	B	1.8	910 Undeveloped (Vacant) Land	BOTHELL
Totals - site B		**2.9**		
39	C	2.3	111 Single Family Residence - Detached	BOTHELL
Totals - site C		**2.3**		
39	D	1.1	910 Undeveloped (Vacant) Land	BOTHELL
39	D	1.1	111 Single Family Residence - Detached	BOTHELL
Totals - site D		**2.2**		
39	E [1]			
Totals - site E				
Portal 41				
41	A	2.2	Vacant(Industrial)	Bothell
41	A	3.2	Vacant(Industrial)	Bothell
41	A	1.3	Vacant(Industrial)	Bothell
Totals - site A		**6.7**		
41	B [1]			
Totals - site B				
41	C	10.6	Vacant(Single-family)	Bothell
41	C	5.5	Industrial(Heavy)	Bothell
Totals - site C		**16.1**		
41	D	4.6	Vacant(Industrial)	Bothell
Totals - site D		**4.6**		
41	E [1]			
Totals - site E				
41	X	3.0	North Creek Pump Station	Bothell
Totals - site X		**3.0**		
Portal 44				
44	A [1]			
Totals - site A				
44	B [1]			
Totals - site B				
44	C	3.6	Vacant(Single-family)	Kenmore
Totals - site C		**3.6**		
44	D	4.8	Farm	Kenmore
44	D	3.9	Single Family(Res Use/Zone)	Kenmore
Totals - site D		**8.8**		
44	E	2.3	Single Family(Res Use/Zone)	Kenmore
Totals - site E		**2.3**		
Portal 45				
45	A	1.0	Single Family(Res Use/Zone)	Kenmore
45	A	0.9	Vacant(Single-family)	Kenmore
Totals - site A		**1.9**		
45	B [1]			
Totals - site B				
45	C	1.7	Single Family(Res Use/Zone)	Lake Forest Park
45	C	1.5	Single Family(Res Use/Zone)	Lake Forest Park
Totals - site C		**3.2**		
45	D	1.8	Single Family(Res Use/Zone)	Kenmore
45	D	0.5	Single Family(Res Use/Zone)	Kenmore
45	D	0.2	Single Family(Res Use/Zone)	Kenmore
45	D	1.4	Vacant(Single-family)	Kenmore
Totals - site D		**3.8**		

[1] This site did not meet the criteria for a candidate site in Level 2 screening

Attachment D

Evaluation Factors Used in the Level 2 Portal Screening Process

Appendix D: Evaluation Factors used in Level 2 Portal Screening Process

	Factors Code		Key Words	Description
	ENGINEERING			
1	ENGR-Constr1	♦	Proximity to tunnel centerline	Measure distance from the projected tunnel centerline to the center of the portal site
2	ENGR-Geo1	♦	Landslide Potential or Steep Slopes	Assess the potential for landslide or slope instability based on surface slope
3	ENGR-Acc	♦	Construction and Maintenance Access	Proximity of a major roadway to potential pump station and portal site for construction and maintenance access
4	ENGR-Constr	●	Site Ground/Surface Water Pretreatment and Disposal	Proximity of the nearest major storm drainage for disposal of site ground/suface
5	ENGR-Constr2	●	Feasibility of Making System Portal Connections	Feasibility of connecting existing pipelines to the tunnel
	COMMUNITY-ENVIRONMENTAL			
6	ENVR-CR	♦	Archeological and Historic Resources	Likely presence of cultural resources
7	ENVR- Bio1	♦	Endangered Species Act Compliance – Conveyance	Likelihood of disruption to special status species habitat at portal site
8	ENVR-Bio 3	♦	High Quality Upland Habitat	Potential for disruption to upland habitats
9	ENVR-Bio2	♦	Wetlands	Impacts to wetlands and their buffers
10	ENVR-Hydro	♦	Stream Impacts	Direct impacts to streams or their buffers
11	ENVR-Acc1	♦	Traffic Disruption- Road & Streets	Extent of construction impacts to existing transportation facilities
12	ENVR-Acc2	♦	Traffic Disruption-Access	Extent of portal construction impact to local traffic access
13	ENVR-LUC	♦	Land Use Compatibility	Relative percentage of land uses with 400 feet of portal site boundary
	LAND ACQUISITION & JURISDICTIONAL			
14	LAND-Time9c	♦	Relative Number of Acquisition Parcels	Estimated number of acquisition parcels at the portal site
15	LAND-Time10c	♦	Relative Level of Upland Property Development	Extent of construction impacts to existing and pending development
16	LAND-Time3c	♦	Legal Restrictions on Title	Title restrictions that limit available useable area
17	LAND-Time5c	♦	Complexity of Relocations - Conveyance	Difficulty of relocating occupants at portal site
18	LAND-Cost8c-r	●	Residential Construction Disruption - Temporary	Relative magnitude of projected temporary construction disruption on residential property uses adjacent to portal site
19	LAND-Cost8d-r	●	Residential Construction Disruption - Permanent	Relative magnitude of projected permanent construction disruption on residential property uses adjacent to portal site
20	LAND-Cost8c-c	●	Commercial Construction Disruption - Temporary	Relative magnitude of projected temporary construction disruption on commercial property uses adjacent to portal site
21	LAND-Cost8d-c	●	Commercial Construction Disruption - Permanent	Relative magnitude of projected permanent construction disruption on commercial property uses adjacent to portal site
	FINANCIAL			
22	LAND-Finan1b	♦	Relative Cost of Site Acquisition and Relocation	Estimated total relative cost of private property acquisitions and relocations in the portal site area

Notes:

♦ Key Factor

● Secondary Factor

Attachment E

Screening Matrix With Evaluation Data

ROUTE 9 INFLUENT 195TH MATRIX

PORTAL 34

Description							
Component	**Code**	**Topic**	**Questions**	**Scale**	**Site A**	**Site B**	**Site F**
			ENGINEERING				
PS/PORT	KEY FACTOR ENGR-Constr1	Proximity to tunnel centerline	What is the distance from the portal site to the projected centerline of the tunnel ROW?	**Scale:** Quantitative value based on the distance from the projected tunnel centerline to the center of the portal site	500	500	100
PS/PORT	KEY FACTOR ENGR-Geo1	Landslide Potential or Steep Slopes	What is the extent of landslide potential or slopes greater than 30 degrees at the potential portal site?	**Scale:** Based on amount of potential portal area subject to landslide potential or slopes >30 degrees **High:** >30% of the total area has landslide potential or slopes >30 degrees **Medium:** <=30% of the total area has landslide potential or slopes >30 degrees **Low:** None of the area has landslide potential or slopes >30 degrees	Low	Low	Low
PS/PORT	KEY FACTOR ENGR-Acc	Construction and Maintenance Access	What is proximity of a major roadway to potential portal site for construction and maintenance access?	**Scale:** Based upon the relative difficulty of entering and exiting the portal site. **High:** Access through private property or residential neighborhood with small streets. **Medium:** Access from one direction only **Low:** Access from both directions	Low	Low	Medium
PS/PORT	SECONDARY FACTOR ENGR-Constr	Site Ground/Surface Water Pretreatment and Disposal	What is the feasibility of reasonably pre-treating and disposing of ground and surface water related to construction activities at the portal site?	**Scale:** Quantitative value based upon the proximity of the nearest major storm drainage system to the potential portal site.	700	700	700
PS/PORT	SECONDARY FACTOR ENGR-Constr2	Feasibility of Making System Portal Connections	If applicable, at this portal site, what is the feasibility of connecting existing pipelines to the tunnel at this site?	**Scale:** Based upon the relative difficulty of making existing piping connections to the tunnel. **High:** Connections Difficult and Complex **Medium:** Connections of Average Difficulty **Low:** Connections Less Complex Than Typical	NA	NA	NA
			COMMUNITY-ENVIRONMENTAL				
PS/PORT	KEY FACTOR ENVR-CR	Archeological and Historic Resources	Are archeological /historic resources likely to be present at portal site?	**Scale:** Archeological/historic resources present at proposed portal site. **High:** Archeological/historical resources likely **Medium**: Archeological/historical resources possible **Low:** Archeological/historical resources unlikely	High	High	
PS/PORT	KEY FACTOR ENVR- Bio1	Endangered Species Act Compliance – Conveyance	Does construction of portals disrupt or cross habitat areas for threatened/endangered/ candidate/state priority species?	**Scale**: Based on a qualitative answer regarding the potential temporary or permanent impacts to habitat areas for threatened / endangered / candidate / state priority species. **High:** Documented presence of special status species or their suitable habitat on the site or directly adjacent and low background activity in the vicinity of the site	Low	Low	Low
PS/PORT	KEY FACTOR ENVR-Bio 3	High Quality Upland Habitat	Does construction of portals disrupt or cross high quality upland habitat areas?	**Yes:** Construction of the portal is likely to disrupt or cross high quality upland habitat areas. **No:** Construction of the portal would not disrupt or cross high quality upland habitat areas	No	No	No
PS/PORT	KEY FACTOR ENVR-Bio2	Wetlands	Would the portals affect wetlands?	**Scale:** Based on the potential temporary or permanent impact to wetlands or their associated buffers within the specific portal site. **High:** The portal site would permanently impact a Class 1 or 2 wetland **Medium**: The portal construction would temporarily impact a Class 1 or 2 wetland. **Low**: The portal would permanently impact a Class 3 or 4 wetland, or a Class 1 or 2 wetland buffer. **No:** The portal would temporarily impact a buffer or have no impact to wetlands or buffers.	Low	Low	No
PS/PORT	KEY FACTOR ENVR-Hydro	Surface Water Impacts	Would the construction of portals disrupt natural surface waters or their buffers?	**Scale:** Based on the potential of temporary or permanent impacts to surface water and/or their associated buffers at the potential portal site. **High:** It is likely that the construction at the portal site would impact natural surface water **Medium:** It is possible that the construction of the portal would impact natural surface water **Low:** It is unlikely that the construction of the portal would impact natural surface water **No:** The construction of the portal would not impact natural surface water	Low	No	Medium
PS/PORT	KEY FACTOR ENVR-Acc1	Traffic Disruption- Road & Streets	To what extent will construction of portals disrupt existing transportation facilities?	**High:** Potential to worsen LOS conditions on roadways with existing capacity limitations **Medium:** Construction access on local streets and arterials with no identified capacity problems **Low:** Available roadway network and/or rights-of-way allow minimal disruption of traffic flow.	Medium	Medium	High
PS/PORT	KEY FACTOR ENVR-Acc2	Traffic Disruption-Access	To what extent will portal construction disrupt local traffic access?	**High:** Construction of portals will require long term (construction period) detours or blocked local access **Medium:** Construction of portals will result in short-term (a few days) detours or blocked access **Low:** Construction of portals will not require detours or blocked local access	Medium	Medium	Medium
PS/PORT	KEY FACTOR ENVR-Luc	Land Use Compatibility	To what extent will construction of portals disrupt adjacent land uses?	**QUANTITATIVE MEASUREMENT OF NUMBER OF STRUCTURES** **High:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 66th percentile and greater of businesses/residences adjacent to portal site **Medium:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 34th-66th percentile of residences/businesses adjacent to portal site **Low:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 33rd and lower percentile of residences/businesses adjacent to portal site	123	54	86
			LAND ACQUISITION & JURISDICTIONAL				
PS/PORT	KEY FACTOR LAND-Time9c	Relative Number of Acquisition Parcels	What is the estimated total number of private property acquisitions in the portal site?	**Scale:** Quantitative value based upon the number of parcels required	3	3	4
PS/PORT	KEY FACTOR LAND-Time10c	Relative Level of Upland Property Development	What is the relative magnitude of construction and permanent impacts due to level of upland development and known level of pending development in portal acquisition site?	**High:** Highest range of construction and permanent impacts due to existing, and known pending, level of development **Middle:** Middle range of construction and permanent impacts due to existing, and known pending, level of development **Low:** Lowest range of construction and permanent impacts due to existing, and known pending, level of development	L	L	H
PS/PORT	KEY FACTOR LAND-Time3c	Legal Restrictions on Title	Are there existing legal restrictions to title in the portal acquisition site which would prevent or limit planned construction?	**High:** Title restrictions severely limit available useable land area and is difficult or impossible to remove **Medium:** Some title restrictions exist but can be removed with some effort or project can be adapted to accommodate **Low:** Title restrictions do not limit available useable land	L	L	L
PS/PORT	KEY FACTOR LAND-Time5c	Complexity of Relocations - Conveyance	How difficult and time-consuming will it be for occupants in the portal site areas to relocate?	**High:** Relocations include unique businesses with unique site requirements **Medium:** Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate **Low:** Relative level of complexity in occupant relocations, appears to be low	L	L	M
PS/PORT	SECONDARY FACTOR LAND-Cost8c-r	Residential Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	L	M	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-r	Residential Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-c	Commercial Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	L	L	M
PS/PORT	SECONDARY FACTOR LAND-Cost8d-c	Commercial Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
			FINANCIAL				
PS/PORT	KEY FACTOR LAND-Finan1b	Relative Cost of Site Acquisition and Relocation	What is the estimated total relative cost of private property acquisitions and relocations in the portal site area?	**High:** Highest cost **Medium:** Moderate cost **Low:** Lowest cost	L	L	H

ROUTE 9 INFLUENT MATRIX

PORTAL 10

Description								
Component	**Code**	**Topic**	**Questions**	**Scale**	**Site A**	**Site C**	**Site D**	**Site E**
			ENGINEERING					
PS/PORT	KEY FACTOR ENGR-Constr1	Proximity to tunnel centerline	What is the distance from the portal site to the projected centerline of the tunnel ROW?	**Scale:** Quantitative value based on the distance from the projected tunnel centerline to the center of the portal site	250	1180	200	500
PS/PORT	KEY FACTOR ENGR-Geo1	Landslide Potential or Steep Slopes	What is the extent of landslide potential or slopes greater than 30 degrees at the potential portal site?	**Scale:** Based on amount of potential portal area subject to landslide potential or slopes >30 degrees **High:** >30% of the total area has landslide potential or slopes >30 degrees **Medium:** <=30% of the total area has landslide potential or slopes >30 degrees **Low:** None of the area has landslide potential or slopes >30 degrees	Low	Low	Low	Low
PS/PORT	KEY FACTOR ENGR-Acc	Construction and Maintenance Access	What is proximity of a major roadway to potential portal site for construction and maintenance access?	**Scale:** Based upon the relative difficulty of entering and exiting the portal site. **High:** Access through private property or residential neighborhood with small streets. **Medium:** Access from one direction only **Low:** Access from both directions	Medium	Low	Low	Low
PS/PORT	SECONDARY FACTOR ENGR-Constr	Site Ground/Surface Water Pretreatment and Disposal	What is the feasibility of reasonably pre-treating and disposing of ground and surface water related to construction activities at the portal site?	**Scale:** Quantitative value based upon the proximity of the nearest major storm drainage system to the potential portal site.	200	180	200	200
PS/PORT	SECONDARY FACTOR ENGR-Constr2	Feasibility of Making System Portal Connections	If applicable, at this portal site, what is the feasibility of connecting existing pipelines to the tunnel at this site?	**Scale:** Based upon the relative difficulty of making existing piping connections to the tunnel. **High:** Connections Difficult and Complex **Medium:** Connections of Average Difficulty **Low:** Connections Less Complex Than Typical	Medium	High	High	Medium
			COMMUNITY-ENVIRONMENTAL					
PS/PORT	KEY FACTOR ENVR-CR	Archeological and Historic Resources	Are archeological /historic resources likely to be present at portal site?	**Scale:** Archeological/historic resources present at proposed portal site. **High:** Archeological/historical resources likely **Medium**: Archeological/historical resources possible **Low:** Archeological/historical resources unlikely	High	high	High	high
PS/PORT	KEY FACTOR ENVR- Bio1	Endangered Species Act Compliance – Conveyance	Does construction of portals disrupt or cross habitat areas for threatened/endangered/ candidate/state priority species?	**Scale**: Based on a qualitative answer regarding the potential temporary or permanent impacts to habitat areas for threatened / endangered / candidate / state priority species. **High:** Documented presence of special status species or their suitable habitat on the site or directly adjacent and low background activity in the vicinity of the site. **Low:** Documented presence of special status species or their suitable habitat near the site, but high background activity in the vicinity of the site and best management practices would reduce potential for impact. **No:** Lack of documented special status species or suitable habitat on or near the site.	Low	Low	Low	Low
PS/PORT	KEY FACTOR ENVR-Bio 3	High Quality Upland Habitat	Does construction of portals disrupt or cross high quality upland habitat areas?	**Yes:** Construction of the portal is likely to disrupt or cross high quality upland habitat areas. **No:** Construction of the portal would not disrupt or cross high quality upland habitat areas.	No	No	No	No
PS/PORT	KEY FACTOR ENVR-Bio2	Wetlands	Would the portals affect wetlands?	**Scale:** Based on the potential temporary or permanent impact to wetlands or their associated buffers within the specific portal site. **High:** The portal site would permanently impact a Class 1 or 2 wetland **Medium**: The portal construction would temporarily impact a Class 1 or 2 wetland. **Low**: The portal would permanently impact a Class 3 or 4 wetland, or a Class 1 or 2 wetland buffer. **No:** The portal would temporarily impact a buffer or have no impact to wetlands or buffers.	Low	Low	No	Low
PS/PORT	KEY FACTOR ENVR-Hydro	Surface Water Impacts	Would the construction of portals disrupt natural surface waters or their buffers?	**Scale:** Based on the potential of temporary or permanent impacts to surface water and/or their associated buffers at the potential portal site. **High:** It is likely that the construction at the portal site would impact natural surface water **Medium:** It is possible that the construction of the portal would impact natural surface water **Low:** It is unlikely that the construction of the portal would impact natural surface water **No:** The construction of the portal would not impact natural surface water	High	High	Low	Low
PS/PORT	KEY FACTOR ENVR-Acc1	Traffic Disruption- Road & Streets	To what extent will construction of portals disrupt existing transportation facilities?	**High:** Potential to worsen LOS conditions on roadways with existing capacity limitations **Medium:** Construction access on local streets and arterials with no identified capacity problems **Low:** Available roadway network and/or rights-of-way allow minimal disruption of traffic flow.	High	Low	High	Low
PS/PORT	KEY FACTOR ENVR-Acc2	Traffic Disruption-Access	To what extent will portal construction disrupt local traffic access?	**High:** Construction of portals will require long term (construction period) detours or blocked local access **Medium:** Construction of portals will result in short-term (a few days) detours or blocked access **Low:** Construction of portals will not require detours or blocked local access	Medium	Medium	High	
PS/PORT	KEY FACTOR ENVR-Luc	Land Use Compatibility	To what extent will construction of portals disrupt adjacent land uses?	**QUANTITATIVE MEASUREMENT OF NUMBER OF STRUCTURES** **High:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 66th percentile and greater of businesses/residences adjacent to portal site **Medium:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 34th-66th percentile of residences/businesses adjacent to portal site **Low:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 33rd and lower percentile of residences/businesses adjacent to portal site	53	31	36	45
			LAND ACQUISITION & JURISDICTIONAL					
PS/PORT	KEY FACTOR LAND-Time9c	Relative Number of Acquisition Parcels	What is the estimated total number of private property acquisitions in the portal site?	**Scale:** Quantitative value based upon the number of parcels required	4	1	1	5
PS/PORT	KEY FACTOR LAND-Time10c	Relative Level of Upland Property Development	What is the relative magnitude of construction and permanent impacts due to level of upland development and known level of pending development in portal acquisition site?	**High:** Highest range of construction and permanent impacts due to existing, and known pending, level of development **Middle:** Middle range of construction and permanent impacts due to existing, and known pending, level of development **Low:** Lowest range of construction and permanent impacts due to existing, and known pending, level of development	M	L	M	L
PS/PORT	KEY FACTOR LAND-Time3c	Legal Restrictions on Title	Are there existing legal restrictions to title in the portal acquisition site which would prevent or limit planned construction?	**High:** Title restrictions severely limit available useable land area and is difficult or impossible to remove **Medium:** Some title restrictions exist but can be removed with some effort or project can be adapted to accommodate **Low:** Title restrictions do not limit available useable land	L	M	L	L
PS/PORT	KEY FACTOR LAND-Time5c	Complexity of Relocations - Conveyance	How difficult and time-consuming will it be for occupants in the portal site areas to relocate?	**High:** Relocations include unique businesses with unique site requirements **Medium:** Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate **Low:** Relative level of complexity in occupant relocations, appears to be low	M	L	M	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-r	Residential Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	M	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-r	Residential Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-c	Commercial Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	L	L	M	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-c	Commercial Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	M	L
			FINANCIAL					
PS/PORT	KEY FACTOR LAND-Finan1b	Relative Cost of Site Acquisition and Relocation	What is the estimated total relative cost of private property acquisitions and relocations in the portal site area?	**High:** Highest cost **Medium:** Moderate cost **Low:** Lowest cost	M	L	H	L

ROUTE 9 INFLUENT MATRIX

PORTAL 11

Description							
Component	**Code**	**Topic**	**Questions**	**Scale**	**Site A**	**Site B**	**Site C**
			ENGINEERING				
PS/PORT	KEY FACTOR ENGR-Constr1	Proximity to tunnel centerline	What is the distance from the portal site to the projected centerline of the tunnel ROW?	**Scale:** Quantitative value based on the distance from the projected tunnel centerline to the center of the portal site	0	300	850
PS/PORT	KEY FACTOR ENGR-Geo1	Landslide Potential or Steep Slopes	What is the extent of landslide potential or slopes greater than 30 degrees at the potential portal site?	**Scale:** Based on amount of potential portal area subject to landslide potential or slopes >30 degrees **High:** >30% of the total area has landslide potential or slopes >30 degrees **Medium:** <=30% of the total area has landslide potential or slopes >30 degrees **Low:** None of the area has landslide potential or slopes >30 degrees	Low	Low	Low
PS/PORT	KEY FACTOR ENGR-Acc	Construction and Maintenance Access	What is proximity of a major roadway to potential portal site for construction and maintenance access?	**Scale:** Based upon the relative difficulty of entering and exiting the portal site. **High:** Access through private property or residential neighborhood with small streets. **Medium:** Access from one direction only **Low:** Access from both directions	Low	Low	Medium
PS/PORT	SECONDARY FACTOR ENGR-Constr	Site Ground/Surface Water Pretreatment and Disposal	What is the feasibility of reasonably pre-treating and disposing of ground and surface water related to construction activities at the portal site?	**Scale:** Quantitative value based upon the proximity of the nearest major storm drainage system to the potential portal site.	850	600	1500
PS/PORT	SECONDARY FACTOR ENGR-Constr2	Feasibility of Making System Portal Connections	If applicable, at this portal site, what is the feasibility of connecting existing pipelines to the tunnel at this site?	**Scale:** Based upon the relative difficulty of making existing piping connections to the tunnel. **High:** Connections Difficult and Complex **Medium:** Connections of Average Difficulty **Low:** Connections Less Complex Than Typical	Medium	Low	High
			COMMUNITY-ENVIRONMENTAL				
PS/PORT	KEY FACTOR ENVR-CR	Archeological and Historic Resources	Are archeological /historic resources likely to be present at portal site?	**Scale:** Archeological/historic resources present at proposed portal site. **High:** Archeological/historical resources likely **Medium**: Archeological/historical resources possible **Low:** Archeological/historical resources unlikely	High	High	High
PS/PORT	KEY FACTOR ENVR- Bio1	Endangered Species Act Compliance – Conveyance	Does construction of portals disrupt or cross habitat areas for threatened/endangered/ candidate/state priority species?	**Scale**: Based on a qualitative answer regarding the potential temporary or permanent impacts to habitat areas for threatened / endangered / candidate / state priority species. **High:** Documented presence of special status species or their suitable habitat on the site or directly adjacent and low background activity in the vicinity of the site. **Low:** Documented presence of special status species or their suitable habitat near the site, but high background activity in the vicinity of the site and best management practices would reduce potential for impact. **No:** Lack of documented special status species or suitable habitat on or near the site.	No	Low	No
PS/PORT	KEY FACTOR ENVR-Bio 3	High Quality Upland Habitat	Does construction of portals disrupt or cross high quality upland habitat areas?	**Yes:** Construction of the portal is likely to disrupt or cross high quality upland habitat areas. **No:** Construction of the portal would not disrupt or cross high quality upland habitat areas.	No	No	No
PS/PORT	KEY FACTOR ENVR-Bio2	Wetlands	Would the portals affect wetlands?	**Scale:** Based on the potential temporary or permanent impact to wetlands or their associated buffers within the specific portal site. **High:** The portal site would permanently impact a Class 1 or 2 wetland **Medium**: The portal construction would temporarily impact a Class 1 or 2 wetland. **Low**: The portal would permanently impact a Class 3 or 4 wetland, or a Class 1 or 2 wetland buffer. **No:** The portal would temporarily impact a buffer or have no impact to wetlands or buffers.	No	No	No
PS/PORT	KEY FACTOR ENVR-Hydro	Surface Water Impacts	Would the construction of portals disrupt natural surface waters or their buffers?	**Scale:** Based on the potential of temporary or permanent impacts to surface water and/or their associated buffers at the potential portal site. **High:** It is likely that the construction at the portal site would impact natural surface water **Medium:** It is possible that the construction of the portal would impact natural surface water **Low:** It is unlikely that the construction of the portal would impact natural surface water **No:** The construction of the portal would not impact natural surface water	Low	Low	No
PS/PORT	KEY FACTOR ENVR-Acc1	Traffic Disruption- Road & Streets	To what extent will construction of portals disrupt existing transportation facilities?	**High:** Potential to worsen LOS conditions on roadways with existing capacity limitations **Medium:** Construction access on local streets and arterials with no identified capacity problems **Low:** Available roadway network and/or rights-of-way allow minimal disruption of traffic flow.	High	High	High
PS/PORT	KEY FACTOR ENVR-Acc2	Traffic Disruption-Access	To what extent will portal construction disrupt local traffic access?	**High:** Construction of portals will require long term (construction period) detours or blocked local access **Medium:** Construction of portals will result in short-term (a few days) detours or blocked access **Low:** Construction of portals will not require detours or blocked local access	Medium	Medium	Medium
PS/PORT	KEY FACTOR ENVR-Luc	Land Use Compatibility	To what extent will construction of portals disrupt adjacent land uses?	**QUANTITATIVE MEASUREMENT OF NUMBER OF STRUCTURES** **High:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 66th percentile and greater of businesses/residences adjacent to portal site **Medium:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 34th-66th percentile of residences/businesses adjacent to portal site **Low:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 33rd and lower percentile of residences/businesses adjacent to portal site	20	13	38
			LAND ACQUISITION & JURISDICTIONAL				
PS/PORT	KEY FACTOR LAND-Time9c	Relative Number of Acquisition Parcels	What is the estimated total number of private property acquisitions in the portal site?	**Scale:** Quantitative value based upon the number of parcels required	3 (1 Easement)	1 (2 Easement)	2 (R/W Access)
PS/PORT	KEY FACTOR LAND-Time10c	Relative Level of Upland Property Development	What is the relative magnitude of construction and permanent impacts due to level of upland development and known level of pending development in portal acquisition site?	**High:** Highest range of construction and permanent impacts due to existing, and known pending, level of development **Middle:** Middle range of construction and permanent impacts due to existing, and known pending, level of development **Low:** Lowest range of construction and permanent impacts due to existing, and known pending, level of development	H	M	H
PS/PORT	KEY FACTOR LAND-Time3c	Legal Restrictions on Title	Are there existing legal restrictions to title in the portal acquisition site which would prevent or limit planned construction?	**High:** Title restrictions severely limit available useable land area and is difficult or impossible to remove **Medium:** Some title restrictions exist but can be removed with some effort or project can be adapted to accommodate **Low:** Title restrictions do not limit available useable land	L	L	L
PS/PORT	KEY FACTOR LAND-Time5c	Complexity of Relocations - Conveyance	How difficult and time-consuming will it be for occupants in the portal site areas to relocate?	**High:** Relocations include unique businesses with unique site requirements **Medium:** Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate **Low:** Relative level of complexity in occupant relocations, appears to be low	M	L	H
PS/PORT	SECONDARY FACTOR LAND-Cost8c-r	Residential Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-r	Residential Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-c	Commercial Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	M	M	M
PS/PORT	SECONDARY FACTOR LAND-Cost8d-c	Commercial Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
			FINANCIAL				
PS/PORT	KEY FACTOR LAND-Finan1b	Relative Cost of Site Acquisition and Relocation	What is the estimated total relative cost of private property acquisitions and relocations in the portal site area?	**High:** Highest cost **Medium:** Moderate cost **Low:** Lowest cost	H	M	H

ROUTE 9 Influent and Effluent195TH MATRIX

PORTAL 41

Description								
Component	**Code**	**Topic**	**Questions**	**Scale**	**Site A**	**Site C**	**Site D**	**Site X**
			ENGINEERING					
PS/PORT	KEY FACTOR ENGR-Constr1	Proximity to tunnel centerline	What is the distance from the portal site to the projected centerline of the tunnel ROW?	**Scale:** Quantitative value based on the distance from the projected tunnel centerline to the center of the portal site	250	200	1000	2000
PS/PORT	KEY FACTOR ENGR-Geo1	Landslide Potential or Steep Slopes	What is the extent of landslide potential or slopes greater than 30 degrees at the potential portal site?	**Scale:** Based on amount of potential portal area subject to landslide potential or slopes >30 degrees **High:** >30% of the total area has landslide potential or slopes >30 degrees **Medium:** <=30% of the total area has landslide potential or slopes >30 degrees **Low:** None of the area has landslide potential or slopes >30 degrees	low	low	low	Low
PS/PORT	KEY FACTOR ENGR-Acc	Construction and Maintenance Access	What is proximity of a major roadway to potential portal site for construction and maintenance access?	**Scale:** Based upon the relative difficulty of entering and exiting the portal site. **High:** Access through private property or residential neighborhood with small streets. **Medium:** Access from one direction only **Low:** Access from both directions	low	low	medium	Low
PS/PORT	SECONDARY FACTOR ENGR-Constr	Site Ground/Surface Water Pretreatment and Disposal	What is the feasibility of reasonably pre-treating and disposing of ground and surface water related to construction activities at the portal site?	**Scale:** Quantitative value based upon the proximity of the nearest major storm drainage system to the potential portal site.	180	1150	350	150
PS/PORT	SECONDARY FACTOR ENGR-Constr2	Feasibility of Making System Portal Connections	If applicable, at this portal site, what is the feasibility of connecting existing pipelines to the tunnel at this site?	**Scale:** Based upon the relative difficulty of making existing piping connections to the tunnel. **High:** Connections Difficult and Complex **Medium:** Connections of Average Difficulty **Low:** Connections Less Complex Than Typical	low	medium	medium	Low
			COMMUNITY-ENVIRONMENTAL					
PS/PORT	KEY FACTOR ENVR-CR	Archeological and Historic Resources	Are archeological /historic resources likely to be present at portal site?	**Scale:** Archeological/historic resources present at proposed portal site. **High:** Archeological/historical resources likely **Medium**: Archeological/historical resources possible **Low:** Archeological/historical resources unlikely	high	high	high	Low
PS/PORT	KEY FACTOR ENVR- Bio1	Endangered Species Act Compliance – Conveyance	Does construction of portals disrupt or cross habitat areas for threatened/endangered/ candidate/state priority species?	**Scale**: Based on a qualitative answer regarding the potential temporary or permanent impacts to habitat areas for threatened / endangered / candidate / state priority species. **High:** Documented presence of special status species or their suitable habitat on the site or directly adjacent and low background activity in the vicinity of the site. **Low:** Documented presence of special status species or their suitable habitat near the site, but high background activity in the vicinity of the site and best management practices would reduce potential for impact. **No:** Lack of documented special status species or suitable habitat on or near the site.	Low (Wildlife concentrations along North Creek Corridor and associated wetlands	Low (Wildlife concentrations along North Creek corridor and adj. forest)	Low (Wildlife/fish concentrations along AR-52a)	No
PS/PORT	KEY FACTOR ENVR-Bio 3	High Quality Upland Habitat	Does construction of portals disrupt or cross high quality upland habitat areas?	**Yes:** Construction of the portal is likely to disrupt or cross high quality upland habitat areas. **No:** Construction of the portal would not disrupt or cross high quality upland habitat areas.	No	Yes	No	No
PS/PORT	KEY FACTOR ENVR-Bio2	Wetlands	Would the portals affect wetlands?	**Scale:** Based on the potential temporary or permanent impact to wetlands or their associated buffers within the specific portal site. **High:** The portal site would permanently impact a Class 1 or 2 wetland **Medium**: The portal construction would temporarily impact a Class 1 or 2 wetland. **Low**: The portal would permanently impact a Class 3 or 4 wetland, or a Class 1 or 2 wetland buffer. **No:** The portal would temporarily impact a buffer or have no impact to wetlands or buffers.	No (Buffer already paved)	No	No	No
PS/PORT	KEY FACTOR ENVR-Hydro	Surface Water Impacts	Would the construction of portals disrupt natural surface waters or their buffers?	**Scale:** Based on the potential of temporary or permanent impacts to surface water and/or their associated buffers at the potential portal site. **High:** It is likely that the construction at the portal site would impact natural surface water **Medium:** It is possible that the construction of the portal would impact natural surface water **Low:** It is unlikely that the construction of the portal would impact natural surface water **No:** The construction of the portal would not impact natural surface water	Medium	Low	Medium	No
PS/PORT	KEY FACTOR ENVR-Acc1	Traffic Disruption- Road & Streets	To what extent will construction of portals disrupt existing transportation facilities?	**High:** Potential to worsen LOS conditions on roadways with existing capacity limitations **Medium:** Construction access on local streets and arterials with no identified capacity problems **Low:** Available roadway network and/or rights-of-way allow minimal disruption of traffic flow.	Low	Low	Low	Low
PS/PORT	KEY FACTOR ENVR-Acc2	Traffic Disruption-Access	To what extent will portal construction disrupt local traffic access?	**High:** Construction of portals will require long term (construction period) detours or blocked local access **Medium:** Construction of portals will result in short-term (a few days) detours or blocked access **Low:** Construction of portals will not require detours or blocked local access	med	medium	medium	Medium
PS/PORT	KEY FACTOR ENVR-Luc	Land Use Compatibility	To what extent will construction of portals disrupt adjacent land uses?	**QUANTITATIVE MEASUREMENT OF NUMBER OF STRUCTURES** **High:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 66th percentile and greater of businesses/residences adjacent to portal site **Medium:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 34th-66th percentile of residences/businesses adjacent to portal site **Low:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 33rd and lower percentile of residences/businesses adjacent to portal site	87	24	15	10
			LAND ACQUISITION & JURISDICTIONAL					
PS/PORT	KEY FACTOR LAND-Time9c	Relative Number of Acquisition Parcels	What is the estimated total number of private property acquisitions in the portal site?	**Scale:** Quantitative value based upon the number of parcels required	3	1	1	6 Easements
PS/PORT	KEY FACTOR LAND-Time10c	Relative Level of Upland Property Development	What is the relative magnitude of construction and permanent impacts due to level of upland development and known level of pending development in portal acquisition site?	**High:** Highest range of construction and permanent impacts due to existing, and known pending, level of development **Middle:** Middle range of construction and permanent impacts due to existing, and known pending, level of development **Low:** Lowest range of construction and permanent impacts due to existing, and known pending, level of development	M	L	L	L
PS/PORT	KEY FACTOR LAND-Time3c	Legal Restrictions on Title	Are there existing legal restrictions to title in the portal acquisition site which would prevent or limit planned construction?	**High:** Title restrictions severely limit available useable land area and is difficult or impossible to remove **Medium:** Some title restrictions exist but can be removed with some effort or project can be adapted to accommodate **Low:** Title restrictions do not limit available useable land	L	L	L	L
PS/PORT	KEY FACTOR LAND-Time5c	Complexity of Relocations - Conveyance	How difficult and time-consuming will it be for occupants in the portal site areas to relocate?	**High:** Relocations include unique businesses with unique site requirements **Medium:** Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate **Low:** Relative level of complexity in occupant relocations, appears to be low	L	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-r	Residential Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	L	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-r	Residential Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-c	Commercial Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	L	M	L	M
PS/PORT	SECONDARY FACTOR LAND-Cost8d-c	Commercial Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L	L
			FINANCIAL					
PS/PORT	KEY FACTOR LAND-Finan1b	Relative Cost of Site Acquisition and Relocation	What is the estimated total relative cost of private property acquisitions and relocations in the portal site area?	**High:** Highest cost **Medium:** Moderate cost **Low:** Lowest cost	M	L	L	L

PORTAL 39							
Description							
Component	**Code**	**Topic**	**Questions**	**Scale**	**Site B**	**Site C**	**Site D**
			ENGINEERING				
PS/PORT	KEY FACTOR ENGR-Constr1	Proximity to tunnel centerline	What is the distance from the portal site to the projected centerline of the tunnel ROW?	**Scale:** Quantitative value based on the distance from the projected tunnel centerline to the center of the portal site	250	500	500
PS/PORT	KEY FACTOR ENGR-Geo1	Landslide Potential or Steep Slopes	What is the extent of landslide potential or slopes greater than 30 degrees at the potential portal site?	**Scale:** Based on amount of potential portal area subject to landslide potential or slopes >30 degrees **High:** >30% of the total area has landslide potential or slopes >30 degrees **Medium:** <=30% of the total area has landslide potential or slopes >30 degrees **Low:** None of the area has landslide potential or slopes >30 degrees	Low	Low	Low
PS/PORT	KEY FACTOR ENGR-Acc	Construction and Maintenance Access	What is proximity of a major roadway to potential portal site for construction and maintenance access?	**Scale:** Based upon the relative difficulty of entering and exiting the portal site. **High:** Access through private property or residential neighborhood with small streets. **Medium:** Access from one direction only **Low:** Access from both directions	Medium	High	High
PS/PORT	SECONDARY FACTOR ENGR-Constr	Site Ground/Surface Water Pretreatment and Disposal	What is the feasibility of reasonably pre-treating and disposing of ground and surface water related to construction activities at the portal site?	**Scale:** Quantitative value based upon the proximity of the nearest major storm drainage system to the potential portal site.	180	250	180
PS/PORT	SECONDARY FACTOR ENGR-Constr2	Feasibility of Making System Portal Connections	If applicable, at this portal site, what is the feasibility of connecting existing pipelines to the tunnel at this site?	**Scale:** Based upon the relative difficulty of making existing piping connections to the tunnel. **High:** Connections Difficult and Complex **Medium:** Connections of Average Difficulty **Low:** Connections Less Complex Than Typical	NA	NA	NA
			COMMUNITY-ENVIRONMENTAL				
PS/PORT	KEY FACTOR ENVR-CR	Archeological and Historic Resources	Are archeological /historic resources likely to be present at portal site?	**Scale:** Archeological/historic resources present at proposed portal site. **High:** Archeological/historical resources likely **Medium**: Archeological/historical resources possible **Low:** Archeological/historical resources unlikely	High	High	High
PS/PORT	KEY FACTOR ENVR- Bio1	Endangered Species Act Compliance – Conveyance	Does construction of portals disrupt or cross habitat areas for threatened/endangered/ candidate/state priority species?	**Scale**: Based on a qualitative answer regarding the potential temporary or permanent impacts to habitat areas for threatened / endangered / candidate / state priority species. **High:** Documented presence of special status species or their suitable habitat on the site or directly adjacent and low background activity in the vicinity of the site. **Low:** Documented presence of special status species or their suitable habitat near the site, but high background activity in the vicinity of the site and best management practices would reduce potential for impact. **No:** Lack of documented special status species or suitable habitat on or near the site.	Low	No	No
PS/PORT	KEY FACTOR ENVR-Bio 3	High Quality Upland Habitat	Does construction of portals disrupt or cross high quality upland habitat areas?	**Yes:** Construction of the portal is likely to disrupt or cross high quality upland habitat areas. **No:** Construction of the portal would not disrupt or cross high quality upland habitat areas.	No	No	No
PS/PORT	KEY FACTOR ENVR-Bio2	Wetlands	Would the portals affect wetlands?	**Scale:** Based on the potential temporary or permanent impact to wetlands or their associated buffers within the specific portal site. **High:** The portal site would permanently impact a Class 1 or 2 wetland **Medium**: The portal construction would temporarily impact a Class 1 or 2 wetland. **Low**: The portal would permanently impact a Class 3 or 4 wetland, or a Class 1 or 2 wetland buffer. **No:** The portal would temporarily impact a buffer or have no impact to wetlands or buffers.	Medium	Low	Low
PS/PORT	KEY FACTOR ENVR-Hydro	Surface Water Impacts	Would the construction of portals disrupt natural surface waters or their buffers?	**Scale:** Based on the potential of temporary or permanent impacts to surface water and/or their associated buffers at the potential portal site. **High:** It is likely that the construction at the portal site would impact natural surface water **Medium:** It is possible that the construction of the portal would impact natural surface water **Low:** It is unlikely that the construction of the portal would impact natural surface water **No:** The construction of the portal would not impact natural surface water	High	High	Medium
PS/PORT	KEY FACTOR ENVR-Acc1	Traffic Disruption- Road & Streets	To what extent will construction of portals disrupt existing transportation facilities?	**High:** Potential to worsen LOS conditions on roadways with existing capacity limitations **Medium:** Construction access on local streets and arterials with no identified capacity problems **Low:** Available roadway network and/or rights-of-way allow minimal disruption of traffic flow.	Medium	Medium	Medium
PS/PORT	KEY FACTOR ENVR-Acc2	Traffic Disruption-Access	To what extent will portal construction disrupt local traffic access?	**High:** Construction of portals will require long term (construction period) detours or blocked local access **Medium:** Construction of portals will result in short-term (a few days) detours or blocked access **Low:** Construction of portals will not require detours or blocked local access	Medium	Medium	High
PS/PORT	KEY FACTOR ENVR-Luc	Land Use Compatibility	To what extent will construction of portals disrupt adjacent land uses?	**QUANTITATIVE MEASUREMENT OF NUMBER OF STRUCTURES** **High:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 66th percentile and greater of businesses/residences adjacent to portal site **Medium:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 34th-66th percentile of residences/businesses adjacent to portal site **Low:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 33rd and lower percentile of residences/businesses adjacent to portal site	13	20	12
			LAND ACQUISITION & JURISDICTIONAL				
PS/PORT	KEY FACTOR LAND-Time9c	Relative Number of Acquisition Parcels	What is the estimated total number of private property acquisitions in the portal site?	**Scale:** Quantitative value based upon the number of parcels required	2	1 (R/W Access)	2 (RW Access)
PS/PORT	KEY FACTOR LAND-Time10c	Relative Level of Upland Property Development	What is the relative magnitude of construction and permanent impacts due to level of upland development and known level of pending development in portal acquisition site?	**High:** Highest range of construction and permanent impacts due to existing, and known pending, level of development **Middle:** Middle range of construction and permanent impacts due to existing, and known pending, level of development **Low:** Lowest range of construction and permanent impacts due to existing, and known pending, level of development	L	L	L
PS/PORT	KEY FACTOR LAND-Time3c	Legal Restrictions on Title	Are there existing legal restrictions to title in the portal acquisition site which would prevent or limit planned construction?	**High:** Title restrictions severely limit available useable land area and is difficult or impossible to remove **Medium:** Some title restrictions exist but can be removed with some effort or project can be adapted to accommodate **Low:** Title restrictions do not limit available useable land	L	L	L
PS/PORT	KEY FACTOR LAND-Time5c	Complexity of Relocations - Conveyance	How difficult and time-consuming will it be for occupants in the portal site areas to relocate?	**High:** Relocations include unique businesses with unique site requirements **Medium:** Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate **Low:** Relative level of complexity in occupant relocations, appears to be low	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-r	Residential Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-r	Residential Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-c	Commercial Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-c	Commercial Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
			FINANCIAL				
PS/PORT	KEY FACTOR LAND-Finan1b	Relative Cost of Site Acquisition and Relocation	What is the estimated total relative cost of private property acquisitions and relocations in the portal site area?	**High:** Highest cost **Medium:** Moderate cost **Low:** Lowest cost	L	L	L

[1] This site was not included in the evaluation model as it was found to be recently develope

ROUTE 9 EFFLUENT 228TH MATRIX

PORTAL 37							
Description							
Component	**Code**	**Topic**	**Questions**	**Scale**	**Site A**	**Site C**	**Site D**
			ENGINEERING				
PS/PORT	KEY FACTOR ENGR-Constr1	Proximity to tunnel centerline	What is the distance from the portal site to the projected centerline of the tunnel ROW?	**Scale:** Quantitative value based on the distance from the projected tunnel centerline to the center of the portal site	500	180	500
PS/PORT	KEY FACTOR ENGR-Geo1	Landslide Potential or Steep Slopes	What is the extent of landslide potential or slopes greater than 30 degrees at the potential portal site?	**Scale:** Based on amount of potential portal area subject to landslide potential or slopes >30 degrees **High:** >30% of the total area has landslide potential or slopes >30 degrees **Medium:** <=30% of the total area has landslide potential or slopes >30 degrees **Low:** None of the area has landslide potential or slopes >30 degrees	Low	Low	Low
PS/PORT	KEY FACTOR ENGR-Acc	Construction and Maintenance Access	What is proximity of a major roadway to potential portal site for construction and maintenance access?	**Scale:** Based upon the relative difficulty of entering and exiting the portal site. **High:** Access through private property or residential neighborhood with small streets. **Medium:** Access from one direction only **Low:** Access from both directions	Medium	Low	Low
PS/PORT	SECONDARY FACTOR ENGR-Constr	Site Ground/Surface Water Pretreatment and Disposal	What is the feasibility of reasonably pre-treating and disposing of ground and surface water related to construction activities at the portal site?	**Scale:** Quantitative value based upon the proximity of the nearest major storm drainage system to the potential portal site.	250	180	250
PS/PORT	SECONDARY FACTOR ENGR-Constr2	Feasibility of Making System Portal Connections	If applicable, at this portal site, what is the feasibility of connecting existing pipelines to the tunnel at this site?	**Scale:** Based upon the relative difficulty of making existing piping connections to the tunnel. **High:** Connections Difficult and Complex **Medium:** Connections of Average Difficulty **Low:** Connections Less Complex Than Typical	NA	NA	NA
			COMMUNITY-ENVIRONMENTAL				
PS/PORT	KEY FACTOR ENVR-CR	Archeological and Historic Resources	Are archeological /historic resources likely to be present at portal site?	**Scale:** Archeological/historic resources present at proposed portal site. **High:** Archeological/historical resources likely **Medium**: Archeological/historical resources possible **Low:** Archeological/historical resources unlikely	High	High	High
PS/PORT	KEY FACTOR ENVR- Bio1	Endangered Species Act Compliance – Conveyance	Does construction of portals disrupt or cross habitat areas for threatened/endangered/ candidate/state priority species?	**Scale**: Based on a qualitative answer regarding the potential temporary or permanent impacts to habitat areas for threatened / endangered / candidate / state priority species. **High:** Documented presence of special status species or their suitable habitat on the site or directly adjacent and low background activity in the vicinity of the site. **Low:** Documented presence of special status species or their suitable habitat near the site, but high background activity in the vicinity of the site and best management practices would reduce potential for impact. **No:** Lack of documented special status species or suitable habitat on or near the site.	Low	Low	Low
PS/PORT	KEY FACTOR ENVR-Bio 3	High Quality Upland Habitat	Does construction of portals disrupt or cross high quality upland habitat areas?	**Yes:** Construction of the portal is likely to disrupt or cross high quality upland habitat areas. **No:** Construction of the portal would not disrupt or cross high quality upland habitat areas.	No	No	No
PS/PORT	KEY FACTOR ENVR-Bio2	Wetlands	Would the portals affect wetlands?	**Scale:** Based on the potential temporary or permanent impact to wetlands or their associated buffers within the specific portal site. **High:** The portal site would permanently impact a Class 1 or 2 wetland **Medium**: The portal construction would temporarily impact a Class 1 or 2 wetland. **Low**: The portal would permanently impact a Class 3 or 4 wetland, or a Class 1 or 2 wetland buffer. **No:** The portal would temporarily impact a buffer or have no impact to wetlands or buffers.	Low	Low	Low
PS/PORT	KEY FACTOR ENVR-Hydro	Surface Water Impacts	Would the construction of portals disrupt natural surface waters or their buffers?	**Scale:** Based on the potential of temporary or permanent impacts to surface water and/or their associated buffers at the potential portal site. **High:** It is likely that the construction at the portal site would impact natural surface water **Medium:** It is possible that the construction of the portal would impact natural surface water **Low:** It is unlikely that the construction of the portal would impact natural surface water **No:** The construction of the portal would not impact natural surface water	Medium	Medium	High
PS/PORT	KEY FACTOR ENVR-Acc1	Traffic Disruption- Road & Streets	To what extent will construction of portals disrupt existing transportation facilities?	**High:** Potential to worsen LOS conditions on roadways with existing capacity limitations **Medium:** Construction access on local streets and arterials with no identified capacity problems **Low:** Available roadway network and/or rights-of-way allow minimal disruption of traffic flow.	High	High	High
PS/PORT	KEY FACTOR ENVR-Acc2	Traffic Disruption-Access	To what extent will portal construction disrupt local traffic access?	**High:** Construction of portals will require long term (construction period) detours or blocked local access **Medium:** Construction of portals will result in short-term (a few days) detours or blocked access **Low:** Construction of portals will not require detours or blocked local access	Medium	Medium	Medium
PS/PORT	KEY FACTOR ENVR-Luc	Land Use Compatibility	To what extent will construction of portals disrupt adjacent land uses?	**QUANTITATIVE MEASUREMENT OF NUMBER OF STRUCTURES** **High:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 66th percentile and greater of businesses/residences adjacent to portal site **Medium:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 34th-66th percentile of residences/businesses adjacent to portal site **Low:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 33rd and lower percentile of residences/businesses adjacent to portal site	11	21	27
			LAND ACQUISITION & JURISDICTIONAL				
PS/PORT	KEY FACTOR LAND-Time9c	Relative Number of Acquisition Parcels	What is the estimated total number of private property acquisitions in the portal site?	**Scale:** Quantitative value based upon the number of parcels required	3	3	2 (1 Easement)
PS/PORT	KEY FACTOR LAND-Time10c	Relative Level of Upland Property Development	What is the relative magnitude of construction and permanent impacts due to level of upland development and known level of pending development in portal acquisition site?	**High:** Highest range of construction and permanent impacts due to existing, and known pending, level of development **Middle:** Middle range of construction and permanent impacts due to existing, and known pending, level of development **Low:** Lowest range of construction and permanent impacts due to existing, and known pending, level of development	L	L	L
PS/PORT	KEY FACTOR LAND-Time3c	Legal Restrictions on Title	Are there existing legal restrictions to title in the portal acquisition site which would prevent or limit planned construction?	**High:** Title restrictions severely limit available useable land area and is difficult or impossible to remove **Medium:** Some title restrictions exist but can be removed with some effort or project can be adapted to accommodate **Low:** Title restrictions do not limit available useable land	L	L	M
PS/PORT	KEY FACTOR LAND-Time5c	Complexity of Relocations - Conveyance	How difficult and time-consuming will it be for occupants in the portal site areas to relocate?	**High:** Relocations include unique businesses with unique site requirements **Medium:** Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate **Low:** Relative level of complexity in occupant relocations, appears to be low	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-r	Residential Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-r	Residential Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-c	Commercial Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-c	Commercial Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
			FINANCIAL				
PS/PORT	KEY FACTOR LAND-Finan1b	Relative Cost of Site Acquisition and Relocation	What is the estimated total relative cost of private property acquisitions and relocations in the portal site area?	**High:** Highest cost **Medium:** Moderate cost **Low:** Lowest cost	L	L	L

ROUTE 9 EFFLUENT 228TH MATRIX

PORTAL 33

Description							
Component	**Code**	**Topic**	**Questions**	**Scale**	**Site A**	**Site C**	**Site D**
			ENGINEERING				
PS/PORT	KEY FACTOR ENGR-Constr1	Proximity to tunnel centerline	What is the distance from the portal site to the projected centerline of the tunnel ROW?	**Scale:** Quantitative value based on the distance from the projected tunnel centerline to the center of the portal site	180	250	0
PS/PORT	KEY FACTOR ENGR-Geo1	Landslide Potential or Steep Slopes	What is the extent of landslide potential or slopes greater than 30 degrees at the potential portal site?	**Scale:** Based on amount of potential portal area subject to landslide potential or slopes >30 degrees **High:** >30% of the total area has landslide potential or slopes >30 degrees **Medium:** <=30% of the total area has landslide potential or slopes >30 degrees **Low:** None of the area has landslide potential or slopes >30 degrees	Low	Low	Low
PS/PORT	KEY FACTOR ENGR-Acc	Construction and Maintenance Access	What is proximity of a major roadway to potential portal site for construction and maintenance access?	**Scale:** Based upon the relative difficulty of entering and exiting the portal site. **High:** Access through private property or residential neighborhood with small streets. **Medium:** Access from one direction only **Low:** Access from both directions	High	Low	Low
PS/PORT	SECONDARY FACTOR ENGR-Constr	Site Ground/Surface Water Pretreatment and Disposal	What is the feasibility of reasonably pre-treating and disposing of ground and surface water related to construction activities at the portal site?	**Scale:** Quantitative value based upon the proximity of the nearest major storm drainage system to the potential portal site.	150	250	250
PS/PORT	SECONDARY FACTOR ENGR-Constr2	Feasibility of Making System Portal Connections	If applicable, at this portal site, what is the feasibility of connecting existing pipelines to the tunnel at this site?	**Scale:** Based upon the relative difficulty of making existing piping connections to the tunnel. **High:** Connections Difficult and Complex **Medium:** Connections of Average Difficulty **Low:** Connections Less Complex Than Typical	NA	NA	NA
			COMMUNITY-ENVIRONMENTAL				
PS/PORT	KEY FACTOR ENVR-CR	Archeological and Historic Resources	Are archeological /historic resources likely to be present at portal site?	**Scale:** Archeological/historic resources present at proposed portal site. **High:** Archeological/historical resources likely **Medium**: Archeological/historical resources possible **Low:** Archeological/historical resources unlikely	High	High	High
PS/PORT	KEY FACTOR ENVR- Bio1	Endangered Species Act Compliance – Conveyance	Does construction of portals disrupt or cross habitat areas for threatened/endangered/ candidate/state priority species?	**Scale**: Based on a qualitative answer regarding the potential temporary or permanent impacts to habitat areas for threatened / endangered / candidate / state priority species. **High:** Documented presence of special status species or their suitable habitat on the site or directly adjacent and low background activity in the vicinity of the site. **Low:** Documented presence of special status species or their suitable habitat near the site, but high background activity in the vicinity of the site and best management practices would reduce potential for impact. **No:** Lack of documented special status species or suitable habitat on or near the site.	Low	Low	Low
PS/PORT	KEY FACTOR ENVR-Bio 3	High Quality Upland Habitat	Does construction of portals disrupt or cross high quality upland habitat areas?	**Yes:** Construction of the portal is likely to disrupt or cross high quality upland habitat areas. **No:** Construction of the portal would not disrupt or cross high quality upland habitat areas.	No	No	No
PS/PORT	KEY FACTOR ENVR-Bio2	Wetlands	Would the portals affect wetlands?	**Scale:** Based on the potential temporary or permanent impact to wetlands or their associated buffers within the specific portal site. **High:** The portal site would permanently impact a Class 1 or 2 wetland **Medium**: The portal construction would temporarily impact a Class 1 or 2 wetland. **Low**: The portal would permanently impact a Class 3 or 4 wetland, or a Class 1 or 2 wetland buffer. **No:** The portal would temporarily impact a buffer or have no impact to wetlands or buffers.	Low	Low	Low
PS/PORT	KEY FACTOR ENVR-Hydro	Surface Water Impacts	Would the construction of portals disrupt natural surface waters or their buffers?	**Scale:** Based on the potential of temporary or permanent impacts to surface water and/or their associated buffers at the potential portal site. **High:** It is likely that the construction at the portal site would impact natural surface water **Medium:** It is possible that the construction of the portal would impact natural surface water **Low:** It is unlikely that the construction of the portal would impact natural surface water **No:** The construction of the portal would not impact natural surface water	Medium	High	Medium
PS/PORT	KEY FACTOR ENVR-Acc1	Traffic Disruption- Road & Streets	To what extent will construction of portals disrupt existing transportation facilities?	**High:** Potential to worsen LOS conditions on roadways with existing capacity limitations **Medium:** Construction access on local streets and arterials with no identified capacity problems **Low:** Available roadway network and/or rights-of-way allow minimal disruption of traffic flow.	Medium	Medium	Medium
PS/PORT	KEY FACTOR ENVR-Acc2	Traffic Disruption-Access	To what extent will portal construction disrupt local traffic access?	**High:** Construction of portals will require long term (construction period) detours or blocked local access **Medium:** Construction of portals will result in short-term (a few days) detours or blocked access **Low:** Construction of portals will not require detours or blocked local access	High	Medium	Medium
PS/PORT	KEY FACTOR ENVR-Luc	Land Use Compatibility	To what extent will construction of portals disrupt adjacent land uses?	**QUANTITATIVE MEASUREMENT OF NUMBER OF STRUCTURES** **High:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 66th percentile and greater of businesses/residences adjacent to portal site **Medium:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 34th-66th percentile of residences/businesses adjacent to portal site **Low:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 33rd and lower percentile of residences/businesses adjacent to portal site	19	75	15
			LAND ACQUISITION & JURISDICTIONAL				
PS/PORT	KEY FACTOR LAND-Time9c	Relative Number of Acquisition Parcels	What is the estimated total number of private property acquisitions in the portal site?	**Scale:** Quantitative value based upon the number of parcels required	1	1	1
PS/PORT	KEY FACTOR LAND-Time10c	Relative Level of Upland Property Development	What is the relative magnitude of construction and permanent impacts due to level of upland development and known level of pending development in portal acquisition site?	**High:** Highest range of construction and permanent impacts due to existing, and known pending, level of development **Middle:** Middle range of construction and permanent impacts due to existing, and known pending, level of development **Low:** Lowest range of construction and permanent impacts due to existing, and known pending, level of development	L	L	L
PS/PORT	KEY FACTOR LAND-Time3c	Legal Restrictions on Title	Are there existing legal restrictions to title in the portal acquisition site which would prevent or limit planned construction?	**High:** Title restrictions severely limit available useable land area and is difficult or impossible to remove **Medium:** Some title restrictions exist but can be removed with some effort or project can be adapted to accommodate **Low:** Title restrictions do not limit available useable land	L	L	L
PS/PORT	KEY FACTOR LAND-Time5c	Complexity of Relocations - Conveyance	How difficult and time-consuming will it be for occupants in the portal site areas to relocate?	**High:** Relocations include unique businesses with unique site requirements **Medium:** Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate **Low:** Relative level of complexity in occupant relocations, appears to be low	L	M	M
PS/PORT	SECONDARY FACTOR LAND-Cost8c-r	Residential Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-r	Residential Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-c	Commercial Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-c	Commercial Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
			FINANCIAL				
PS/PORT	KEY FACTOR LAND-Finan1b	Relative Cost of Site Acquisition and Relocation	What is the estimated total relative cost of private property acquisitions and relocations in the portal site area?	**High:** Highest cost **Medium:** Moderate cost **Low:** Lowest cost	M	M	M

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PORTAL 30

Description							
Component	**Code**	**Topic**	**Questions**	**Scale**	**Site A**	**Site B**	**Site C**
			ENGINEERING				
PS/PORT	KEY FACTOR ENGR-Constr1	Proximity to tunnel centerline	What is the distance from the portal site to the projected centerline of the tunnel ROW?	**Scale:** Quantitative value based on the distance from the projected tunnel centerline to the center of the portal site	680	200	350
PS/PORT	KEY FACTOR ENGR-Geo1	Landslide Potential or Steep Slopes	What is the extent of landslide potential or slopes greater than 30 degrees at the potential portal site?	**Scale:** Based on amount of potential portal area subject to landslide potential or slopes >30 degrees **High:** >30% of the total area has landslide potential or slopes >30 degrees **Medium:** <=30% of the total area has landslide potential or slopes >30 degrees **Low:** None of the area has landslide potential or slopes >30 degrees	Low	Low	Low
PS/PORT	KEY FACTOR ENGR-Acc	Construction and Maintenance Access	What is proximity of a major roadway to potential portal site for construction and maintenance access?	**Scale:** Based upon the relative difficulty of entering and exiting the portal site. **High:** Access through private property or residential neighborhood with small streets. **Medium:** Access from one direction only **Low:** Access from both directions	High	Medium	Medium
PS/PORT	SECONDARY FACTOR ENGR-Constr	Site Ground/Surface Water Pretreatment and Disposal	What is the feasibility of reasonably pre-treating and disposing of ground and surface water related to construction activities at the portal site?	**Scale:** Quantitative value based upon the proximity of the nearest major storm drainage system to the potential portal site.	180	1000	180
PS/PORT	SECONDARY FACTOR ENGR-Constr2	Feasibility of Making System Portal Connections	If applicable, at this portal site, what is the feasibility of connecting existing pipelines to the tunnel at this site?	**Scale:** Based upon the relative difficulty of making existing piping connections to the tunnel. **High:** Connections Difficult and Complex **Medium:** Connections of Average Difficulty **Low:** Connections Less Complex Than Typical	NA	NA	NA
			COMMUNITY-ENVIRONMENTAL				
PS/PORT	KEY FACTOR ENVR-CR	Archeological and Historic Resources	Are archeological /historic resources likely to be present at portal site?	**Scale:** Archeological/historic resources present at proposed portal site. **High:** Archeological/historical resources likely **Medium**: Archeological/historical resources possible **Low:** Archeological/historical resources unlikely	Low	Low	Low
PS/PORT	KEY FACTOR ENVR- Bio1	Endangered Species Act Compliance – Conveyance	Does construction of portals disrupt or cross habitat areas for threatened/endangered/ candidate/state priority species?	**Scale**: Based on a qualitative answer regarding the potential temporary or permanent impacts to habitat areas for threatened / endangered / candidate / state priority species. **High:** Documented presence of special status species or their suitable habitat on the site or directly adjacent and low background activity in the vicinity of the site. **Low:** Documented presence of special status species or their suitable habitat near the site, but high background activity in the vicinity of the site and best management practices would reduce potential for impact. **No:** Lack of documented special status species or suitable habitat on or near the site.	Low	No	High
PS/PORT	KEY FACTOR ENVR-Bio 3	High Quality Upland Habitat	Does construction of portals disrupt or cross high quality upland habitat areas?	**Yes:** Construction of the portal is likely to disrupt or cross high quality upland habitat areas. **No:** Construction of the portal would not disrupt or cross high quality upland habitat areas.	No	No	Yes
PS/PORT	KEY FACTOR ENVR-Bio2	Wetlands	Would the portals affect wetlands?	**Scale:** Based on the potential temporary or permanent impact to wetlands or their associated buffers within the specific portal site. **High:** The portal site would permanently impact a Class 1 or 2 wetland **Medium**: The portal construction would temporarily impact a Class 1 or 2 wetland. **Low**: The portal would permanently impact a Class 3 or 4 wetland, or a Class 1 or 2 wetland buffer. **No:** The portal would temporarily impact a buffer or have no impact to wetlands or buffers.	No	No	High
PS/PORT	KEY FACTOR ENVR-Hydro	Surface Water Impacts	Would the construction of portals disrupt natural surface waters or their buffers?	**Scale:** Based on the potential of temporary or permanent impacts to surface water and/or their associated buffers at the potential portal site. **High:** It is likely that the construction at the portal site would impact natural surface water **Medium:** It is possible that the construction of the portal would impact natural surface water **Low:** It is unlikely that the construction of the portal would impact natural surface water **No:** The construction of the portal would not impact natural surface water	High	Low	High
PS/PORT	KEY FACTOR ENVR-Acc1	Traffic Disruption- Road & Streets	To what extent will construction of portals disrupt existing transportation facilities?	**High:** Potential to worsen LOS conditions on roadways with existing capacity limitations **Medium:** Construction access on local streets and arterials with no identified capacity problems **Low:** Available roadway network and/or rights-of-way allow minimal disruption of traffic flow.	Medium	Medium	Medium
PS/PORT	KEY FACTOR ENVR-Acc2	Traffic Disruption-Access	To what extent will portal construction disrupt local traffic access?	**High:** Construction of portals will require long term (construction period) detours or blocked local access **Medium:** Construction of portals will result in short-term (a few days) detours or blocked access **Low:** Construction of portals will not require detours or blocked local access	High	Medium	Medium
PS/PORT	KEY FACTOR ENVR-Luc	Land Use Compatibility	To what extent will construction of portals disrupt adjacent land uses?	**QUANTITATIVE MEASUREMENT OF NUMBER OF STRUCTURES** **High:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 66th percentile and greater of businesses/residences adjacent to portal site **Medium:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 34th-66th percentile of residences/businesses adjacent to portal site **Low:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 33rd and lower percentile of residences/businesses adjacent to portal site	31	51	89
			LAND ACQUISITION & JURISDICTIONAL				
PS/PORT	KEY FACTOR LAND-Time9c	Relative Number of Acquisition Parcels	What is the estimated total number of private property acquisitions in the portal site?	**Scale:** Quantitative value based upon the number of parcels required	2 (1 Easement)	6	2 (1 Easement)
PS/PORT	KEY FACTOR LAND-Time10c	Relative Level of Upland Property Development	What is the relative magnitude of construction and permanent impacts due to level of upland development and known level of pending development in portal acquisition site?	**High:** Highest range of construction and permanent impacts due to existing, and known pending, level of development **Middle:** Middle range of construction and permanent impacts due to existing, and known pending, level of development **Low:** Lowest range of construction and permanent impacts due to existing, and known pending, level of development	L	M	L
PS/PORT	KEY FACTOR LAND-Time3c	Legal Restrictions on Title	Are there existing legal restrictions to title in the portal acquisition site which would prevent or limit planned construction?	**High:** Title restrictions severely limit available useable land area and is difficult or impossible to remove **Medium:** Some title restrictions exist but can be removed with some effort or project can be adapted to accommodate **Low:** Title restrictions do not limit available useable land	M	L	L
PS/PORT	KEY FACTOR LAND-Time5c	Complexity of Relocations - Conveyance	How difficult and time-consuming will it be for occupants in the portal site areas to relocate?	**High:** Relocations include unique businesses with unique site requirements **Medium:** Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate **Low:** Relative level of complexity in occupant relocations, appears to be low	L	M	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-r	Residential Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-r	Residential Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-c	Commercial Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	M	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-c	Commercial Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
			FINANCIAL				
PS/PORT	KEY FACTOR LAND-Finan1b	Relative Cost of Site Acquisition and Relocation	What is the estimated total relative cost of private property acquisitions and relocations in the portal site area?	**High:** Highest cost **Medium:** Moderate cost **Low:** Lowest cost	M	M	L

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PORTAL 26

Description							
Component	**Code**	**Topic**	**Questions**	**Scale**	**Site A**	**Site C**	**Site D**
			ENGINEERING				
PS/PORT	KEY FACTOR ENGR-Constr1	Proximity to tunnel centerline	What is the distance from the portal site to the projected centerline of the tunnel ROW?	**Scale:** Quantitative value based on the distance from the projected tunnel centerline to the center of the portal site	425	830	180
PS/PORT	KEY FACTOR ENGR-Geo1	Landslide Potential or Steep Slopes	What is the extent of landslide potential or slopes greater than 30 degrees at the potential portal site?	**Scale:** Based on amount of potential portal area subject to landslide potential or slopes >30 degrees **High:** >30% of the total area has landslide potential or slopes >30 degrees **Medium:** <=30% of the total area has landslide potential or slopes >30 degrees **Low:** None of the area has landslide potential or slopes >30 degrees	Low	Low	Low
PS/PORT	KEY FACTOR ENGR-Acc	Construction and Maintenance Access	What is proximity of a major roadway to potential portal site for construction and maintenance access?	**Scale:** Based upon the relative difficulty of entering and exiting the portal site. **High:** Access through private property or residential neighborhood with small streets. **Medium:** Access from one direction only **Low:** Access from both directions	Low	Low	Low
PS/PORT	SECONDARY FACTOR ENGR-Constr	Site Ground/Surface Water Pretreatment and Disposal	What is the feasibility of reasonably pre-treating and disposing of ground and surface water related to construction activities at the portal site?	**Scale:** Quantitative value based upon the proximity of the nearest major storm drainage system to the potential portal site.	180	800	180
PS/PORT	SECONDARY FACTOR ENGR-Constr2	Feasibility of Making System Portal Connections	If applicable, at this portal site, what is the feasibility of connecting existing pipelines to the tunnel at this site?	**Scale:** Based upon the relative difficulty of making existing piping connections to the tunnel. **High:** Connections Difficult and Complex **Medium:** Connections of Average Difficulty **Low:** Connections Less Complex Than Typical	NA	NA	NA
			COMMUNITY-ENVIRONMENTAL				
PS/PORT	KEY FACTOR ENVR-CR	Archeological and Historic Resources	Are archeological /historic resources likely to be present at portal site?	**Scale:** Archeological/historic resources present at proposed portal site. **High:** Archeological/historical resources likely **Medium**: Archeological/historical resources possible **Low:** Archeological/historical resources unlikely	High	High	High
PS/PORT	KEY FACTOR ENVR- Bio1	Endangered Species Act Compliance – Conveyance	Does construction of portals disrupt or cross habitat areas for threatened/endangered/ candidate/state priority species?	**Scale**: Based on a qualitative answer regarding the potential temporary or permanent impacts to habitat areas for threatened / endangered / candidate / state priority species. **High:** Documented presence of special status species or their suitable habitat on the site or directly adjacent and low background activity in the vicinity of the site. **Low:** Documented presence of special status species or their suitable habitat near the site, but high background activity in the vicinity of the site and best management practices would reduce potential for impact. **No:** Lack of documented special status species or suitable habitat on or near the site.	Low	No	High
PS/PORT	KEY FACTOR ENVR-Bio 3	High Quality Upland Habitat	Does construction of portals disrupt or cross high quality upland habitat areas?	**Yes:** Construction of the portal is likely to disrupt or cross high quality upland habitat areas. **No:** Construction of the portal would not disrupt or cross high quality upland habitat areas.	No	No	Yes
PS/PORT	KEY FACTOR ENVR-Bio2	Wetlands	Would the portals affect wetlands?	**Scale:** Based on the potential temporary or permanent impact to wetlands or their associated buffers within the specific portal site. **High:** The portal site would permanently impact a Class 1 or 2 wetland **Medium**: The portal construction would temporarily impact a Class 1 or 2 wetland. **Low**: The portal would permanently impact a Class 3 or 4 wetland, or a Class 1 or 2 wetland buffer. **No:** The portal would temporarily impact a buffer or have no impact to wetlands or buffers.	No	No	Low
PS/PORT	KEY FACTOR ENVR-Hydro	Surface Water Impacts	Would the construction of portals disrupt natural surface waters or their buffers?	**Scale:** Based on the potential of temporary or permanent impacts to surface water and/or their associated buffers at the potential portal site. **High:** It is likely that the construction at the portal site would impact natural surface water **Medium:** It is possible that the construction of the portal would impact natural surface water **Low:** It is unlikely that the construction of the portal would impact natural surface water **No:** The construction of the portal would not impact natural surface water	Medium	Medium	High
PS/PORT	KEY FACTOR ENVR-Acc1	Traffic Disruption- Road & Streets	To what extent will construction of portals disrupt existing transportation facilities?	**High:** Potential to worsen LOS conditions on roadways with existing capacity limitations **Medium:** Construction access on local streets and arterials with no identified capacity problems **Low:** Available roadway network and/or rights-of-way allow minimal disruption of traffic flow.	Medium	Medium	Medium
PS/PORT	KEY FACTOR ENVR-Acc2	Traffic Disruption-Access	To what extent will portal construction disrupt local traffic access?	**High:** Construction of portals will require long term (construction period) detours or blocked local access **Medium:** Construction of portals will result in short-term (a few days) detours or blocked access **Low:** Construction of portals will not require detours or blocked local access	Medium	Medium	Medium
PS/PORT	KEY FACTOR ENVR-Luc	Land Use Compatibility	To what extent will construction of portals disrupt adjacent land uses?	**QUANTITATIVE MEASUREMENT OF NUMBER OF STRUCTURES** **High:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 66th percentile and greater of businesses/residences adjacent to portal site **Medium:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 34th-66th percentile of residences/businesses adjacent to portal site **Low:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 33rd and lower percentile of residences/businesses adjacent to portal site	74	89	87
			LAND ACQUISITION & JURISDICTIONAL				
PS/PORT	KEY FACTOR LAND-Time9c	Relative Number of Acquisition Parcels	What is the estimated total number of private property acquisitions in the portal site?	**Scale:** Quantitative value based upon the number of parcels required	1	1 (R/W Access)	6
PS/PORT	KEY FACTOR LAND-Time10c	Relative Level of Upland Property Development	What is the relative magnitude of construction and permanent impacts due to level of upland development and known level of pending development in portal acquisition site?	**High:** Highest range of construction and permanent impacts due to existing, and known pending, level of development **Middle:** Middle range of construction and permanent impacts due to existing, and known pending, level of development **Low:** Lowest range of construction and permanent impacts due to existing, and known pending, level of development	L	H	L
PS/PORT	KEY FACTOR LAND-Time3c	Legal Restrictions on Title	Are there existing legal restrictions to title in the portal acquisition site which would prevent or limit planned construction?	**High:** Title restrictions severely limit available useable land area and is difficult or impossible to remove **Medium:** Some title restrictions exist but can be removed with some effort or project can be adapted to accommodate **Low:** Title restrictions do not limit available useable land	M	L	L
PS/PORT	KEY FACTOR LAND-Time5c	Complexity of Relocations - Conveyance	How difficult and time-consuming will it be for occupants in the portal site areas to relocate?	**High:** Relocations include unique businesses with unique site requirements **Medium:** Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate **Low:** Relative level of complexity in occupant relocations, appears to be low	L	H	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-r	Residential Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-r	Residential Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-c	Commercial Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	L	H	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-c	Commercial Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
			FINANCIAL				
PS/PORT	KEY FACTOR LAND-Finan1b	Relative Cost of Site Acquisition and Relocation	What is the estimated total relative cost of private property acquisitions and relocations in the portal site area?	**High:** Highest cost **Medium:** Moderate cost **Low:** Lowest cost	L	H	L

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PORTAL 24

Description							
Component	**Code**	**Topic**	**Questions**	**Scale**	**Site A**	**Site B**	**Site C**
			ENGINEERING				
PS/PORT	KEY FACTOR ENGR-Constr1	Proximity to tunnel centerline	What is the distance from the portal site to the projected centerline of the tunnel ROW?	**Scale:** Quantitative value based on the distance from the projected tunnel centerline to the center of the portal site	250	180	250
PS/PORT	KEY FACTOR ENGR-Geo1	Landslide Potential or Steep Slopes	What is the extent of landslide potential or slopes greater than 30 degrees at the potential portal site?	**Scale:** Based on amount of potential portal area subject to landslide potential or slopes >30 degrees **High:** >30% of the total area has landslide potential or slopes >30 degrees **Medium:** <=30% of the total area has landslide potential or slopes >30 degrees **Low:** None of the area has landslide potential or slopes >30 degrees	Low	Low	Low
PS/PORT	KEY FACTOR ENGR-Acc	Construction and Maintenance Access	What is proximity of a major roadway to potential portal site for construction and maintenance access?	**Scale:** Based upon the relative difficulty of entering and exiting the portal site. **High:** Access through private property or residential neighborhood with small streets. **Medium:** Access from one direction only **Low:** Access from both directions	Low	Low	Medium
PS/PORT	SECONDARY FACTOR ENGR-Constr	Site Ground/Surface Water Pretreatment and Disposal	What is the feasibility of reasonably pre-treating and disposing of ground and surface water related to construction activities at the portal site?	**Scale:** Quantitative value based upon the proximity of the nearest major storm drainage system to the potential portal site.	180	800	180
PS/PORT	SECONDARY FACTOR ENGR-Constr2	Feasibility of Making System Portal Connections	If applicable, at this portal site, what is the feasibility of connecting existing pipelines to the tunnel at this site?	**Scale:** Based upon the relative difficulty of making existing piping connections to the tunnel. **High:** Connections Difficult and Complex **Medium:** Connections of Average Difficulty **Low:** Connections Less Complex Than Typical	NA	NA	NA
			COMMUNITY-ENVIRONMENTAL				
PS/PORT	KEY FACTOR ENVR-CR	Archeological and Historic Resources	Are archeological /historic resources likely to be present at portal site?	**Scale:** Archeological/historic resources present at proposed portal site. **High:** Archeological/historical resources likely **Medium**: Archeological/historical resources possible **Low:** Archeological/historical resources unlikely	Low	Low	Low
PS/PORT	KEY FACTOR ENVR- Bio1	Endangered Species Act Compliance – Conveyance	Does construction of portals disrupt or cross habitat areas for threatened/endangered/ candidate/state priority species?	**Scale**: Based on a qualitative answer regarding the potential temporary or permanent impacts to habitat areas for threatened / endangered / candidate / state priority species. **High:** Documented presence of special status species or their suitable habitat on the site or directly adjacent and low background activity in the vicinity of the site. **Low:** Documented presence of special status species or their suitable habitat near the site, but high background activity in the vicinity of the site and best management practices would reduce potential for impact. **No:** Lack of documented special status species or suitable habitat on or near the site.	No	No	No
PS/PORT	KEY FACTOR ENVR-Bio 3	High Quality Upland Habitat	Does construction of portals disrupt or cross high quality upland habitat areas?	**Yes:** Construction of the portal is likely to disrupt or cross high quality upland habitat areas. **No:** Construction of the portal would not disrupt or cross high quality upland habitat areas.	No	No	No
PS/PORT	KEY FACTOR ENVR-Bio2	Wetlands	Would the portals affect wetlands?	**Scale:** Based on the potential temporary or permanent impact to wetlands or their associated buffers within the specific portal site. **High:** The portal site would permanently impact a Class 1 or 2 wetland **Medium**: The portal construction would temporarily impact a Class 1 or 2 wetland. **Low**: The portal would permanently impact a Class 3 or 4 wetland, or a Class 1 or 2 wetland buffer. **No:** The portal would temporarily impact a buffer or have no impact to wetlands or buffers.	No	No	No
PS/PORT	KEY FACTOR ENVR-Hydro	Surface Water Impacts	Would the construction of portals disrupt natural surface waters or their buffers?	**Scale:** Based on the potential of temporary or permanent impacts to surface water and/or their associated buffers at the potential portal site. **High:** It is likely that the construction at the portal site would impact natural surface water **Medium:** It is possible that the construction of the portal would impact natural surface water **Low:** It is unlikely that the construction of the portal would impact natural surface water **No:** The construction of the portal would not impact natural surface water	No	No	No
PS/PORT	KEY FACTOR ENVR-Acc1	Traffic Disruption- Road & Streets	To what extent will construction of portals disrupt existing transportation facilities?	**High:** Potential to worsen LOS conditions on roadways with existing capacity limitations **Medium:** Construction access on local streets and arterials with no identified capacity problems **Low:** Available roadway network and/or rights-of-way allow minimal disruption of traffic flow.	Medium	Medium	Medium
PS/PORT	KEY FACTOR ENVR-Acc2	Traffic Disruption-Access	To what extent will portal construction disrupt local traffic access?	**High:** Construction of portals will require long term (construction period) detours or blocked local access **Medium:** Construction of portals will result in short-term (a few days) detours or blocked access **Low:** Construction of portals will not require detours or blocked local access	Medium	Medium	Medium
PS/PORT	KEY FACTOR ENVR-Luc	Land Use Compatibility	To what extent will construction of portals disrupt adjacent land uses?	**QUANTITATIVE MEASUREMENT OF NUMBER OF STRUCTURES** **High:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 66th percentile and greater of businesses/residences adjacent to portal site **Medium:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 34th-66th percentile of residences/businesses adjacent to portal site **Low:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 33rd and lower percentile of residences/businesses adjacent to portal site	68	70	86
			LAND ACQUISITION & JURISDICTIONAL				
PS/PORT	KEY FACTOR LAND-Time9c	Relative Number of Acquisition Parcels	What is the estimated total number of private property acquisitions in the portal site?	**Scale:** Quantitative value based upon the number of parcels required	6 (2 Easements)	6 (2 Easements)	7 (1 Easement)
PS/PORT	KEY FACTOR LAND-Time10c	Relative Level of Upland Property Development	What is the relative magnitude of construction and permanent impacts due to level of upland development and known level of pending development in portal acquisition site?	**High:** Highest range of construction and permanent impacts due to existing, and known pending, level of development **Middle:** Middle range of construction and permanent impacts due to existing, and known pending, level of development **Low:** Lowest range of construction and permanent impacts due to existing, and known pending, level of development	L	L	L
PS/PORT	KEY FACTOR LAND-Time3c	Legal Restrictions on Title	Are there existing legal restrictions to title in the portal acquisition site which would prevent or limit planned construction?	**High:** Title restrictions severely limit available useable land area and is difficult or impossible to remove **Medium:** Some title restrictions exist but can be removed with some effort or project can be adapted to accommodate **Low:** Title restrictions do not limit available useable land	L	L	L
PS/PORT	KEY FACTOR LAND-Time5c	Complexity of Relocations - Conveyance	How difficult and time-consuming will it be for occupants in the portal site areas to relocate?	**High:** Relocations include unique businesses with unique site requirements **Medium:** Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate **Low:** Relative level of complexity in occupant relocations, appears to be low	L	M	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-r	Residential Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-r	Residential Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-c	Commercial Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-c	Commercial Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
			FINANCIAL				
PS/PORT	KEY FACTOR LAND-Finan1b	Relative Cost of Site Acquisition and Relocation	What is the estimated total relative cost of private property acquisitions and relocations in the portal site area?	**High:** Highest cost **Medium:** Moderate cost **Low:** Lowest cost	M	M	M

ROUTE 9 EFFLUENT 228TH MATRIX

PORTAL 22

Description								
Component	**Code**	**Topic**	**Questions**	**Scale**	**Site C**	**Site D**	**Site E**	**Site F**
			ENGINEERING					
PS/PORT	KEY FACTOR ENGR-Constr1	Proximity to tunnel centerline	What is the distance from the portal site to the projected centerline of the tunnel ROW?	**Scale:** Quantitative value based on the distance from the projected tunnel centerline to the center of the portal site	180	500	580	180
PS/PORT	KEY FACTOR ENGR-Geo1	Landslide Potential or Steep Slopes	What is the extent of landslide potential or slopes greater than 30 degrees at the potential portal site?	**Scale:** Based on amount of potential portal area subject to landslide potential or slopes >30 degrees **High:** >30% of the total area has landslide potential or slopes >30 degrees **Medium:** <=30% of the total area has landslide potential or slopes >30 degrees **Low:** None of the area has landslide potential or slopes >30 degrees	Medium	Medium	Low	Low
PS/PORT	KEY FACTOR ENGR-Acc	Construction and Maintenance Access	What is proximity of a major roadway to potential portal site for construction and maintenance access?	**Scale:** Based upon the relative difficulty of entering and exiting the portal site. **High:** Access through private property or residential neighborhood with small streets. **Medium:** Access from one direction only **Low:** Access from both directions	Low	Medium	High	Low
PS/PORT	SECONDARY FACTOR ENGR-Constr	Site Ground/Surface Water Pretreatment and Disposal	What is the feasibility of reasonably pre-treating and disposing of ground and surface water related to construction activities at the portal site?	**Scale:** Quantitative value based upon the proximity of the nearest major storm drainage system to the potential portal site.	180	180	180	180
PS/PORT	SECONDARY FACTOR ENGR-Constr2	Feasibility of Making System Portal Connections	If applicable, at this portal site, what is the feasibility of connecting existing pipelines to the tunnel at this site?	**Scale:** Based upon the relative difficulty of making existing piping connections to the tunnel. **High:** Connections Difficult and Complex **Medium:** Connections of Average Difficulty **Low:** Connections Less Complex Than Typical	NA	NA	NA	NA
			COMMUNITY-ENVIRONMENTAL					
PS/PORT	KEY FACTOR ENVR-CR	Archeological and Historic Resources	Are archeological /historic resources likely to be present at portal site?	**Scale:** Archeological/historic resources present at proposed portal site. **High:** Archeological/historical resources likely **Medium**: Archeological/historical resources possible **Low:** Archeological/historical resources unlikely	Low	Low	Low	Low
PS/PORT	KEY FACTOR ENVR- Bio1	Endangered Species Act Compliance – Conveyance	Does construction of portals disrupt or cross habitat areas for threatened/endangered/ candidate/state priority species?	**Scale**: Based on a qualitative answer regarding the potential temporary or permanent impacts to habitat areas for threatened / endangered / candidate / state priority species. **High:** Documented presence of special status species or their suitable habitat on the site or directly adjacent and low background activity in the vicinity of the site. **Low:** Documented presence of special status species or their suitable habitat near the site, but high background activity in the vicinity of the site and best management practices would reduce potential for impact. **No:** Lack of documented special status species or suitable habitat on or near the site.	Low	Low	Low	Low
PS/PORT	KEY FACTOR ENVR-Bio 3	High Quality Upland Habitat	Does construction of portals disrupt or cross high quality upland habitat areas?	**Yes:** Construction of the portal is likely to disrupt or cross high quality upland habitat areas. **No:** Construction of the portal would not disrupt or cross high quality upland habitat areas.	Yes	Yes	Yes	No
PS/PORT	KEY FACTOR ENVR-Bio2	Wetlands	Would the portals affect wetlands?	**Scale:** Based on the potential temporary or permanent impact to wetlands or their associated buffers within the specific portal site. **High:** The portal site would permanently impact a Class 1 or 2 wetland **Medium**: The portal construction would temporarily impact a Class 1 or 2 wetland. **Low**: The portal would permanently impact a Class 3 or 4 wetland, or a Class 1 or 2 wetland buffer. **No:** The portal would temporarily impact a buffer or have no impact to wetlands or buffers.	No	No	No	No
PS/PORT	KEY FACTOR ENVR-Hydro	Surface Water Impacts	Would the construction of portals disrupt natural surface waters or their buffers?	**Scale:** Based on the potential of temporary or permanent impacts to surface water and/or their associated buffers at the potential portal site. **High:** It is likely that the construction at the portal site would impact natural surface water **Medium:** It is possible that the construction of the portal would impact natural surface water **Low:** It is unlikely that the construction of the portal would impact natural surface water **No:** The construction of the portal would not impact natural surface water	No	No	No	No
PS/PORT	KEY FACTOR ENVR-Acc1	Traffic Disruption- Road & Streets	To what extent will construction of portals disrupt existing transportation facilities?	**High:** Potential to worsen LOS conditions on roadways with existing capacity limitations **Medium:** Construction access on local streets and arterials with no identified capacity problems **Low:** Available roadway network and/or rights-of-way allow minimal disruption of traffic flow.	Low	Low	Medium	Low
PS/PORT	KEY FACTOR ENVR-Acc2	Traffic Disruption-Access	To what extent will portal construction disrupt local traffic access?	**High:** Construction of portals will require long term (construction period) detours or blocked local access **Medium:** Construction of portals will result in short-term (a few days) detours or blocked access **Low:** Construction of portals will not require detours or blocked local access	Low	Medium	High	
PS/PORT	KEY FACTOR ENVR-Luc	Land Use Compatibility	To what extent will construction of portals disrupt adjacent land uses?	**QUANTITATIVE MEASUREMENT OF NUMBER OF STRUCTURES** **High:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 66th percentile and greater of businesses/residences adjacent to portal site **Medium:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 34th-66th percentile of residences/businesses adjacent to portal site **Low:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 33rd and lower percentile of residences/businesses adjacent to portal site	66	56	39	55
			LAND ACQUISITION & JURISDICTIONAL					
PS/PORT	KEY FACTOR LAND-Time9c	Relative Number of Acquisition Parcels	What is the estimated total number of private property acquisitions in the portal site?	**Scale:** Quantitative value based upon the number of parcels required	6	5 (R/W Access)	3 (2 Easements)	6
PS/PORT	KEY FACTOR LAND-Time10c	Relative Level of Upland Property Development	What is the relative magnitude of construction and permanent impacts due to level of upland development and known level of pending development in portal acquisition site?	**High:** Highest range of construction and permanent impacts due to existing, and known pending, level of development **Middle:** Middle range of construction and permanent impacts due to existing, and known pending, level of development **Low:** Lowest range of construction and permanent impacts due to existing, and known pending, level of development	M	M	M	M
PS/PORT	KEY FACTOR LAND-Time3c	Legal Restrictions on Title	Are there existing legal restrictions to title in the portal acquisition site which would prevent or limit planned construction?	**High:** Title restrictions severely limit available useable land area and is difficult or impossible to remove **Medium:** Some title restrictions exist but can be removed with some effort or project can be adapted to accommodate **Low:** Title restrictions do not limit available useable land	L	L	L	L
PS/PORT	KEY FACTOR LAND-Time5c	Complexity of Relocations - Conveyance	How difficult and time-consuming will it be for occupants in the portal site areas to relocate?	**High:** Relocations include unique businesses with unique site requirements **Medium:** Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate **Low:** Relative level of complexity in occupant relocations, appears to be low	M	M	M	M
PS/PORT	SECONDARY FACTOR LAND-Cost8c-r	Residential Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	L	M	L	M
PS/PORT	SECONDARY FACTOR LAND-Cost8d-r	Residential Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-c	Commercial Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	L	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-c	Commercial Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L	L
			FINANCIAL					
PS/PORT	KEY FACTOR LAND-Finan1b	Relative Cost of Site Acquisition and Relocation	What is the estimated total relative cost of private property acquisitions and relocations in the portal site area?	**High:** Highest cost **Medium:** Moderate cost **Low:** Lowest cost	M	M	M	M

ROUTE 9 EFFLUENT 228TH MATRIX

PORTAL 19							
Description							
Component	**Code**	**Topic**	**Questions**	**Scale**	**Site A**	**Site C**	**Site E**
			ENGINEERING				
PS/PORT	KEY FACTOR ENGR-Constr1	Proximity to tunnel centerline	What is the distance from the portal site to the projected centerline of the tunnel ROW?	**Scale:** Quantitative value based on the distance from the projected tunnel centerline to the center of the portal site	400	100	800
PS/PORT	KEY FACTOR ENGR-Geo1	Landslide Potential or Steep Slopes	What is the extent of landslide potential or slopes greater than 30 degrees at the potential portal site?	**Scale:** Based on amount of potential portal area subject to landslide potential or slopes >30 degrees **High:** >30% of the total area has landslide potential or slopes >30 degrees **Medium:** <=30% of the total area has landslide potential or slopes >30 degrees **Low:** None of the area has landslide potential or slopes >30 degrees	Low	Low	Low
PS/PORT	KEY FACTOR ENGR-Acc	Construction and Maintenance Access	What is proximity of a major roadway to potential portal site for construction and maintenance access?	**Scale:** Based upon the relative difficulty of entering and exiting the portal site. **High:** Access through private property or residential neighborhood with small streets. **Medium:** Access from one direction only **Low:** Access from both directions	High	Low	Low
PS/PORT	SECONDARY FACTOR ENGR-Constr	Site Ground/Surface Water Pretreatment and Disposal	What is the feasibility of reasonably pre-treating and disposing of ground and surface water related to construction activities at the portal site?	**Scale:** Quantitative value based upon the proximity of the nearest major storm drainage system to the potential portal site.	1200	180	200
PS/PORT	SECONDARY FACTOR ENGR-Constr2	Feasibility of Making System Portal Connections	If applicable, at this portal site, what is the feasibility of connecting existing pipelines to the tunnel at this site?	**Scale:** Based upon the relative difficulty of making existing piping connections to the tunnel. **High:** Connections Difficult and Complex **Medium:** Connections of Average Difficulty **Low:** Connections Less Complex Than Typical	NA	NA	NA
			COMMUNITY-ENVIRONMENTAL				
PS/PORT	KEY FACTOR ENVR-CR	Archeological and Historic Resources	Are archeological /historic resources likely to be present at portal site?	**Scale:** Archeological/historic resources present at proposed portal site. **High:** Archeological/historical resources likely **Medium**: Archeological/historical resources possible **Low:** Archeological/historical resources unlikely	High	High	High
PS/PORT	KEY FACTOR ENVR- Bio1	Endangered Species Act Compliance – Conveyance	Does construction of portals disrupt or cross habitat areas for threatened/endangered/ candidate/state priority species?	**Scale**: Based on a qualitative answer regarding the potential temporary or permanent impacts to habitat areas for threatened / endangered / candidate / state priority species. **High:** Documented presence of special status species or their suitable habitat on the site or directly adjacent and low background activity in the vicinity of the site. **Low:** Documented presence of special status species or their suitable habitat near the site, but high background activity in the vicinity of the site and best management practices would reduce potential for impact. **No:** Lack of documented special status species or suitable habitat on or near the site.	Low (Bald Eagles utilize area, Pileated woodpecker and Great Blue Heron Habitat)	Low (Bald eagles and Great Blue Heron Utilize shoreline).	Low
PS/PORT	KEY FACTOR ENVR-Bio 3	High Quality Upland Habitat	Does construction of portals disrupt or cross high quality upland habitat areas?	**Yes:** Construction of the portal is likely to disrupt or cross high quality upland habitat areas. **No:** Construction of the portal would not disrupt or cross high quality upland habitat areas.	Yes	Yes	No
PS/PORT	KEY FACTOR ENVR-Bio2	Wetlands	Would the portals affect wetlands?	**Scale:** Based on the potential temporary or permanent impact to wetlands or their associated buffers within the specific portal site. **High:** The portal site would permanently impact a Class 1 or 2 wetland **Medium**: The portal construction would temporarily impact a Class 1 or 2 wetland. **Low**: The portal would permanently impact a Class 3 or 4 wetland, or a Class 1 or 2 wetland buffer. **No:** The portal would temporarily impact a buffer or have no impact to wetlands or buffers.	Low (Class 3 wetland impacts likely)	Low (Class 4 wetland impacts possible)	No
PS/PORT	KEY FACTOR ENVR-Hydro	Surface Water Impacts	Would the construction of portals disrupt natural surface waters or their buffers?	**Scale:** Based on the potential of temporary or permanent impacts to surface water and/or their associated buffers at the potential portal site. **High:** It is likely that the construction at the portal site would impact natural surface water **Medium:** It is possible that the construction of the portal would impact natural surface water **Low:** It is unlikely that the construction of the portal would impact natural surface water **No:** The construction of the portal would not impact natural surface water	Medium	Medium	Medium
PS/PORT	KEY FACTOR ENVR-Acc1	Traffic Disruption- Road & Streets	To what extent will construction of portals disrupt existing transportation facilities?	**High:** Potential to worsen LOS conditions on roadways with existing capacity limitations **Medium:** Construction access on local streets and arterials with no identified capacity problems **Low:** Available roadway network and/or rights-of-way allow minimal disruption of traffic flow.	Medium	Medium	Medium
PS/PORT	KEY FACTOR ENVR-Acc2	Traffic Disruption-Access	To what extent will portal construction disrupt local traffic access?	**High:** Construction of portals will require long term (construction period) detours or blocked local access **Medium:** Construction of portals will result in short-term (a few days) detours or blocked access **Low:** Construction of portals will not require detours or blocked local access	High	Low	
PS/PORT	KEY FACTOR ENVR-Luc	Land Use Compatibility	To what extent will construction of portals disrupt adjacent land uses?	**QUANTITATIVE MEASUREMENT OF NUMBER OF STRUCTURES** **High:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 66th percentile and greater of businesses/residences adjacent to portal site **Medium:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 34th-66th percentile of residences/businesses adjacent to portal site **Low:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 33rd and lower percentile of residences/businesses adjacent to portal site	16	15	48
			LAND ACQUISITION & JURISDICTIONAL				
PS/PORT	KEY FACTOR LAND-Time9c	Relative Number of Acquisition Parcels	What is the estimated total number of private property acquisitions in the portal site?	**Scale:** Quantitative value based upon the number of parcels required	1 (1 Easement)	1	1
PS/PORT	KEY FACTOR LAND-Time10c	Relative Level of Upland Property Development	What is the relative magnitude of construction and permanent impacts due to level of upland development and known level of pending development in portal acquisition site?	**High:** Highest range of construction and permanent impacts due to existing, and known pending, level of development **Middle:** Middle range of construction and permanent impacts due to existing, and known pending, level of development **Low:** Lowest range of construction and permanent impacts due to existing, and known pending, level of development	L	L	L
PS/PORT	KEY FACTOR LAND-Time3c	Legal Restrictions on Title	Are there existing legal restrictions to title in the portal acquisition site which would prevent or limit planned construction?	**High:** Title restrictions severely limit available useable land area and is difficult or impossible to remove **Medium:** Some title restrictions exist but can be removed with some effort or project can be adapted to accommodate **Low:** Title restrictions do not limit available useable land	L	L	L
PS/PORT	KEY FACTOR LAND-Time5c	Complexity of Relocations - Conveyance	How difficult and time-consuming will it be for occupants in the portal site areas to relocate?	**High:** Relocations include unique businesses with unique site requirements **Medium:** Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate **Low:** Relative level of complexity in occupant relocations, appears to be low	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-r	Residential Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	M	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-r	Residential Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-c	Commercial Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	L	M	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-c	Commercial Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
			FINANCIAL				
PS/PORT	KEY FACTOR LAND-Finan1b	Relative Cost of Site Acquisition and Relocation	What is the estimated total relative cost of private property acquisitions and relocations in the portal site area?	**High:** Highest cost **Medium:** Moderate cost **Low:** Lowest cost	M	M	L

UNOCAL MATRIX

PORTAL 5

Description							
Component	**Code**	**Topic**	**Questions**	**Scale**	**Site B**	**Site X [1]**	**Site G [1]**
			ENGINEERING				
PS/PORT	KEY FACTOR ENGR-Constr1	Proximity to tunnel centerline	What is the distance from the portal site to the projected centerline of the tunnel ROW?	**Scale:** Quantitative value based on the distance from the projected tunnel centerline to the center of the portal site	350	100	250
PS/PORT	KEY FACTOR ENGR-Geo1	Landslide Potential or Steep Slopes	What is the extent of landslide potential or slopes greater than 30 degrees at the potential portal site?	**Scale:** Based on amount of potential portal area subject to landslide potential or slopes >30 degrees **High:** >30% of the total area has landslide potential or slopes >30 degrees **Medium:** <=30% of the total area has landslide potential or slopes >30 degrees **Low:** None of the area has landslide potential or slopes >30 degrees	Low	Low	Low
PS/PORT	KEY FACTOR ENGR-Acc	Construction and Maintenance Access	What is proximity of a major roadway to potential portal site for construction and maintenance access?	**Scale:** Based upon the relative difficulty of entering and exiting the portal site. **High:** Access through private property or residential neighborhood with small streets. **Medium:** Access from one direction only **Low:** Access from both directions	Medium	Low	Medium
PS/PORT	SECONDARY FACTOR ENGR-Constr	Site Ground/Surface Water Pretreatment and Disposal	What is the feasibility of reasonably pre-treating and disposing of ground and surface water related to construction activities at the portal site?	**Scale:** Quantitative value based upon the proximity of the nearest major storm drainage system to the potential portal site.	250	100	200
PS/PORT	SECONDARY FACTOR ENGR-Constr2	Feasibility of Making System Portal Connections	If applicable, at this portal site, what is the feasibility of connecting existing pipelines to the tunnel at this site?	**Scale:** Based upon the relative difficulty of making existing piping connections to the tunnel. **High:** Connections Difficult and Complex **Medium:** Connections of Average Difficulty **Low:** Connections Less Complex Than Typical	NA	N/A	N/A
			COMMUNITY-ENVIRONMENTAL				
PS/PORT	KEY FACTOR ENVR-CR	Archeological and Historic Resources	Are archeological /historic resources likely to be present at portal site?	**Scale:** Archeological/historic resources present at proposed portal site. **High:** Archeological/historical resources likely **Medium**: Archeological/historical resources possible **Low:** Archeological/historical resources unlikely	High	Low	Low
PS/PORT	KEY FACTOR ENVR- Bio1	Endangered Species Act Compliance – Conveyance	Does construction of portals disrupt or cross habitat areas for threatened/endangered/ candidate/state priority species?	**Scale**: Based on a qualitative answer regarding the potential temporary or permanent impacts to habitat areas for threatened / endangered / candidate / state priority species. **High:** Documented presence of special status species or their suitable habitat on the site or directly adjacent and low background activity in the vicinity of the site. **Low:** Documented presence of special status species or their suitable habitat near the site, but high background activity in the vicinity of the site and best management practices would reduce potential for impact. **No:** Lack of documented special status species or suitable habitat on or near the site.	No	No	No
PS/PORT	KEY FACTOR ENVR-Bio 3	High Quality Upland Habitat	Does construction of portals disrupt or cross high quality upland habitat areas?	**Yes:** Construction of the portal is likely to disrupt or cross high quality upland habitat areas. **No:** Construction of the portal would not disrupt or cross high quality upland habitat areas.	No	No	No
PS/PORT	KEY FACTOR ENVR-Bio2	Wetlands	Would the portals affect wetlands?	**Scale:** Based on the potential temporary or permanent impact to wetlands or their associated buffers within the specific portal site. **High:** The portal site would permanently impact a Class 1 or 2 wetland **Medium**: The portal construction would temporarily impact a Class 1 or 2 wetland. **Low**: The portal would permanently impact a Class 3 or 4 wetland, or a Class 1 or 2 wetland buffer. **No:** The portal would temporarily impact a buffer or have no impact to wetlands or buffers.	No	No	No
PS/PORT	KEY FACTOR ENVR-Hydro	Surface Water Impacts	Would the construction of portals disrupt natural surface waters or their buffers?	**Scale:** Based on the potential of temporary or permanent impacts to surface water and/or their associated buffers at the potential portal site. **High:** It is likely that the construction at the portal site would impact natural surface water **Medium:** It is possible that the construction of the portal would impact natural surface water **Low:** It is unlikely that the construction of the portal would impact natural surface water **No:** The construction of the portal would not impact natural surface water	No	No	No
PS/PORT	KEY FACTOR ENVR-Acc1	Traffic Disruption- Road & Streets	To what extent will construction of portals disrupt existing transportation facilities?	**High:** Potential to worsen LOS conditions on roadways with existing capacity limitations **Medium:** Construction access on local streets and arterials with no identified capacity problems **Low:** Available roadway network and/or rights-of-way allow minimal disruption of traffic flow.	Medium	Medium	Medium
PS/PORT	KEY FACTOR ENVR-Acc2	Traffic Disruption-Access	To what extent will portal construction disrupt local traffic access?	**High:** Construction of portals will require long term (construction period) detours or blocked local access **Medium:** Construction of portals will result in short-term (a few days) detours or blocked access **Low:** Construction of portals will not require detours or blocked local access	Medium	High	Medium
PS/PORT	KEY FACTOR ENVR-Luc	Land Use Compatibility	To what extent will construction of portals disrupt adjacent land uses?	**QUANTITATIVE MEASUREMENT OF NUMBER OF STRUCTURES** **High:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 66th percentile and greater of businesses/residences adjacent to portal site **Medium:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 34th-66th percentile of residences/businesses adjacent to portal site **Low:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 33rd and lower percentile of residences/businesses adjacent to portal site	71	23	35
			LAND ACQUISITION & JURISDICTIONAL				
PS/PORT	KEY FACTOR LAND-Time9c	Relative Number of Acquisition Parcels	What is the estimated total number of private property acquisitions in the portal site?	**Scale:** Quantitative value based upon the number of parcels required	2 (1 Easement)	2	2
PS/PORT	KEY FACTOR LAND-Time10c	Relative Level of Upland Property Development	What is the relative magnitude of construction and permanent impacts due to level of upland development and known level of pending development in portal acquisition site?	**High:** Highest range of construction and permanent impacts due to existing, and known pending, level of development **Middle:** Middle range of construction and permanent impacts due to existing, and known pending, level of development **Low:** Lowest range of construction and permanent impacts due to existing, and known pending, level of development	H	H	M
PS/PORT	KEY FACTOR LAND-Time3c	Legal Restrictions on Title	Are there existing legal restrictions to title in the portal acquisition site which would prevent or limit planned construction?	**High:** Title restrictions severely limit available useable land area and is difficult or impossible to remove **Medium:** Some title restrictions exist but can be removed with some effort or project can be adapted to accommodate **Low:** Title restrictions do not limit available useable land	L	L	L
PS/PORT	KEY FACTOR LAND-Time5c	Complexity of Relocations - Conveyance	How difficult and time-consuming will it be for occupants in the portal site areas to relocate?	**High:** Relocations include unique businesses with unique site requirements **Medium:** Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate **Low:** Relative level of complexity in occupant relocations, appears to be low	M	M	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-r	Residential Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	L	M	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-r	Residential Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-c	Commercial Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	M	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-c	Commercial Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
			FINANCIAL				
PS/PORT	KEY FACTOR LAND-Finan1b	Relative Cost of Site Acquisition and Relocation	What is the estimated total relative cost of private property acquisitions and relocations in the portal site area?	**High:** Highest cost **Medium:** Moderate cost **Low:** Lowest cost	H	H	L

ROUTE 9 Influent and Effluent 195TH MATRIX

PORTAL 44							
Description							
Component	**Code**	**Topic**	**Questions**	**Scale**	**Site C**	**Site D**	**Site E**
			ENGINEERING				
PS/PORT	KEY FACTOR ENGR-Constr1	Proximity to tunnel centerline	What is the distance from the portal site to the projected centerline of the tunnel ROW?	**Scale:** Quantitative value based on the distance from the projected tunnel centerline to the center of the portal site	800	250	200
PS/PORT	KEY FACTOR ENGR-Geo1	Landslide Potential or Steep Slopes	What is the extent of landslide potential or slopes greater than 30 degrees at the potential portal site?	**Scale:** Based on amount of potential portal area subject to landslide potential or slopes >30 degrees **High:** >30% of the total area has landslide potential or slopes >30 degrees **Medium:** <=30% of the total area has landslide potential or slopes >30 degrees **Low:** None of the area has landslide potential or slopes >30 degrees	Low	Low	Low
PS/PORT	KEY FACTOR ENGR-Acc	Construction and Maintenance Access	What is proximity of a major roadway to potential portal site for construction and maintenance access?	**Scale:** Based upon the relative difficulty of entering and exiting the portal site. **High:** Access through private property or residential neighborhood with small streets. **Medium:** Access from one direction only **Low:** Access from both directions	High	Med	Med
PS/PORT	SECONDARY FACTOR ENGR-Constr	Site Ground/Surface Water Pretreatment and Disposal	What is the feasibility of reasonably pre-treating and disposing of ground and surface water related to construction activities at the portal site?	**Scale:** Quantitative value based upon the proximity of the nearest major storm drainage system to the potential portal site.	1500	1500	1500
PS/PORT	SECONDARY FACTOR ENGR-Constr2	Feasibility of Making System Portal Connections	If applicable, at this portal site, what is the feasibility of connecting existing pipelines to the tunnel at this site?	**Scale:** Based upon the relative difficulty of making existing piping connections to the tunnel. **High:** Connections Difficult and Complex **Medium:** Connections of Average Difficulty **Low:** Connections Less Complex Than Typical	NA	NA	NA
			COMMUNITY-ENVIRONMENTAL				
PS/PORT	KEY FACTOR ENVR-CR	Archeological and Historic Resources	Are archeological /historic resources likely to be present at portal site?	**Scale:** Archeological/historic resources present at proposed portal site. **High:** Archeological/historical resources likely **Medium**: Archeological/historical resources possible **Low:** Archeological/historical resources unlikely	High	High	High
PS/PORT	KEY FACTOR ENVR- Bio1	Endangered Species Act Compliance – Conveyance	Does construction of portals disrupt or cross habitat areas for threatened/endangered/ candidate/state priority species?	**Scale**: Based on a qualitative answer regarding the potential temporary or permanent impacts to habitat areas for threatened / endangered / candidate / state priority species. **High:** Documented presence of special status species or their suitable habitat on the site or directly adjacent and low background activity in the vicinity of the site. **Low:** Documented presence of special status species or their suitable habitat near the site, but high background activity in the vicinity of the site and best management practices would reduce potential for impact. **No:** Lack of documented special status species or suitable habitat on or near the site.	Low	Low	Low
PS/PORT	KEY FACTOR ENVR-Bio 3	High Quality Upland Habitat	Does construction of portals disrupt or cross high quality upland habitat areas?	**Yes:** Construction of the portal is likely to disrupt or cross high quality upland habitat areas. **No:** Construction of the portal would not disrupt or cross high quality upland habitat areas.	Yes	Yes	No
PS/PORT	KEY FACTOR ENVR-Bio2	Wetlands	Would the portals affect wetlands?	**Scale:** Based on the potential temporary or permanent impact to wetlands or their associated buffers within the specific portal site. **High:** The portal site would permanently impact a Class 1 or 2 wetland **Medium**: The portal construction would temporarily impact a Class 1 or 2 wetland. **Low**: The portal would permanently impact a Class 3 or 4 wetland, or a Class 1 or 2 wetland buffer. **No:** The portal would temporarily impact a buffer or have no impact to wetlands or buffers.	No	No	No
PS/PORT	KEY FACTOR ENVR-Hydro	Surface Water Impacts	Would the construction of portals disrupt natural surface waters or their buffers?	**Scale:** Based on the potential of temporary or permanent impacts to surface water and/or their associated buffers at the potential portal site. **High:** It is likely that the construction at the portal site would impact natural surface water **Medium:** It is possible that the construction of the portal would impact natural surface water **Low:** It is unlikely that the construction of the portal would impact natural surface water **No:** The construction of the portal would not impact natural surface water	Medium	Medium	Low
PS/PORT	KEY FACTOR ENVR-Acc1	Traffic Disruption- Road & Streets	To what extent will construction of portals disrupt existing transportation facilities?	**High:** Potential to worsen LOS conditions on roadways with existing capacity limitations **Medium:** Construction access on local streets and arterials with no identified capacity problems **Low:** Available roadway network and/or rights-of-way allow minimal disruption of traffic flow.	Medium	Medium	Low
PS/PORT	KEY FACTOR ENVR-Acc2	Traffic Disruption-Access	To what extent will portal construction disrupt local traffic access?	**High:** Construction of portals will require long term (construction period) detours or blocked local access **Medium:** Construction of portals will result in short-term (a few days) detours or blocked access **Low:** Construction of portals will not require detours or blocked local access	Med	Med	
PS/PORT	KEY FACTOR ENVR-Luc	Land Use Compatibility	To what extent will construction of portals disrupt adjacent land uses?	**QUANTITATIVE MEASUREMENT OF NUMBER OF STRUCTURES** **High:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 66th percentile and greater of businesses/residences adjacent to portal site **Medium:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 34th-66th percentile of residences/businesses adjacent to portal site **Low:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 33rd and lower percentile of residences/businesses adjacent to portal site	8	14	51
			LAND ACQUISITION & JURISDICTIONAL				
PS/PORT	KEY FACTOR LAND-Time9c	Relative Number of Acquisition Parcels	What is the estimated total number of private property acquisitions in the portal site?	**Scale:** Quantitative value based upon the number of parcels required	1 (2 Easements)	1	1
PS/PORT	KEY FACTOR LAND-Time10c	Relative Level of Upland Property Development	What is the relative magnitude of construction and permanent impacts due to level of upland development and known level of pending development in portal acquisition site?	**High:** Highest range of construction and permanent impacts due to existing, and known pending, level of development **Middle:** Middle range of construction and permanent impacts due to existing, and known pending, level of development **Low:** Lowest range of construction and permanent impacts due to existing, and known pending, level of development	L	L	L
PS/PORT	KEY FACTOR LAND-Time3c	Legal Restrictions on Title	Are there existing legal restrictions to title in the portal acquisition site which would prevent or limit planned construction?	**High:** Title restrictions severely limit available useable land area and is difficult or impossible to remove **Medium:** Some title restrictions exist but can be removed with some effort or project can be adapted to accommodate **Low:** Title restrictions do not limit available useable land	L	L	L
PS/PORT	KEY FACTOR LAND-Time5c	Complexity of Relocations - Conveyance	How difficult and time-consuming will it be for occupants in the portal site areas to relocate?	**High:** Relocations include unique businesses with unique site requirements **Medium:** Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate **Low:** Relative level of complexity in occupant relocations, appears to be low	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-r	Residential Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-r	Residential Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-c	Commercial Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-c	Commercial Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
			FINANCIAL				
PS/PORT	KEY FACTOR LAND-Finan1b	Relative Cost of Site Acquisition and Relocation	What is the estimated total relative cost of private property acquisitions and relocations in the portal site area?	**High:** Highest cost **Medium:** Moderate cost **Low:** Lowest cost	L	M	L

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PORTAL 45

Description

Component	Code	Topic	Questions	Scale	Site A	Site C	Site D
			ENGINEERING				
PS/PORT	KEY FACTOR ENGR-Constr1	Proximity to tunnel centerline	What is the distance from the portal site to the projected centerline of the tunnel ROW?	**Scale:** Quantitative value based on the distance from the projected tunnel centerline to the center of the portal site	750	700	800
PS/PORT	KEY FACTOR ENGR-Geo1	Landslide Potential or Steep Slopes	What is the extent of landslide potential or slopes greater than 30 degrees at the potential portal site?	**Scale:** Based on amount of potential portal area subject to landslide potential or slopes >30 degrees **High:** >30% of the total area has landslide potential or slopes >30 degrees **Medium:** <=30% of the total area has landslide potential or slopes >30 degrees **Low:** None of the area has landslide potential or slopes >30 degrees	Low	Low	Low
PS/PORT	KEY FACTOR ENGR-Acc	Construction and Maintenance Access	What is proximity of a major roadway to potential portal site for construction and maintenance access?	**Scale:** Based upon the relative difficulty of entering and exiting the portal site. **High:** Access through private property or residential neighborhood with small streets. **Medium:** Access from one direction only **Low:** Access from both directions	high	Low	Low
PS/PORT	SECONDARY FACTOR ENGR-Constr	Site Ground/Surface Water Pretreatment and Disposal	What is the feasibility of reasonably pre-treating and disposing of ground and surface water related to construction activities at the portal site?	**Scale:** Quantitative value based upon the proximity of the nearest major storm drainage system to the potential portal site.	1000	400	180
PS/PORT	SECONDARY FACTOR ENGR-Constr2	Feasibility of Making System Portal Connections	If applicable, at this portal site, what is the feasibility of connecting existing pipelines to the tunnel at this site?	**Scale:** Based upon the relative difficulty of making existing piping connections to the tunnel. **High:** Connections Difficult and Complex **Medium:** Connections of Average Difficulty **Low:** Connections Less Complex Than Typical	NA	NA	NA
			COMMUNITY-ENVIRONMENTAL				
PS/PORT	KEY FACTOR ENVR-CR	Archeological and Historic Resources	Are archeological /historic resources likely to be present at portal site?	**Scale:** Archeological/historic resources present at proposed portal site. **High:** Archeological/historical resources likely **Medium**: Archeological/historical resources possible **Low:** Archeological/historical resources unlikely	High	High	High
PS/PORT	KEY FACTOR ENVR- Bio1	Endangered Species Act Compliance – Conveyance	Does construction of portals disrupt or cross habitat areas for threatened/endangered/ candidate/state priority species?	**Scale**: Based on a qualitative answer regarding the potential temporary or permanent impacts to habitat areas for threatened / endangered / candidate / state priority species. **High:** Documented presence of special status species or their suitable habitat on the site or directly adjacent and low background activity in the vicinity of the site. **Low:** Documented presence of special status species or their suitable habitat near the site, but high background activity in the vicinity of the site and best management practices would reduce potential for impact. **No:** Lack of documented special status species or suitable habitat on or near the site.	No	Low	Low
PS/PORT	KEY FACTOR ENVR-Bio 3	High Quality Upland Habitat	Does construction of portals disrupt or cross high quality upland habitat areas?	**Yes:** Construction of the portal is likely to disrupt or cross high quality upland habitat areas. **No:** Construction of the portal would not disrupt or cross high quality upland habitat areas.	No	Yes	No
PS/PORT	KEY FACTOR ENVR-Bio2	Wetlands	Would the portals affect wetlands?	**Scale:** Based on the potential temporary or permanent impact to wetlands or their associated buffers within the specific portal site. **High:** The portal site would permanently impact a Class 1 or 2 wetland **Medium**: The portal construction would temporarily impact a Class 1 or 2 wetland. **Low**: The portal would permanently impact a Class 3 or 4 wetland, or a Class 1 or 2 wetland buffer. **No:** The portal would temporarily impact a buffer or have no impact to wetlands or buffers.	Low	Low	Low
PS/PORT	KEY FACTOR ENVR-Hydro	Surface Water Impacts	Would the construction of portals disrupt natural surface waters or their buffers?	**Scale:** Based on the potential of temporary or permanent impacts to surface water and/or their associated buffers at the potential portal site. **High:** It is likely that the construction at the portal site would impact natural surface water **Medium:** It is possible that the construction of the portal would impact natural surface water **Low:** It is unlikely that the construction of the portal would impact natural surface water **No:** The construction of the portal would not impact natural surface water	Low	Low	High
PS/PORT	KEY FACTOR ENVR-Acc1	Traffic Disruption- Road & Streets	To what extent will construction of portals disrupt existing transportation facilities?	**High:** Potential to worsen LOS conditions on roadways with existing capacity limitations **Medium:** Construction access on local streets and arterials with no identified capacity problems **Low:** Available roadway network and/or rights-of-way allow minimal disruption of traffic flow.	Low	Low	Low
PS/PORT	KEY FACTOR ENVR-Acc2	Traffic Disruption-Access	To what extent will portal construction disrupt local traffic access?	**High:** Construction of portals will require long term (construction period) detours or blocked local access **Medium:** Construction of portals will result in short-term (a few days) detours or blocked access **Low:** Construction of portals will not require detours or blocked local access	High	Low	Low
PS/PORT	KEY FACTOR ENVR-Luc	Land Use Compatibility	To what extent will construction of portals disrupt adjacent land uses?	**QUANTITATIVE MEASUREMENT OF NUMBER OF STRUCTURES** **High:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 66th percentile and greater of businesses/residences adjacent to portal site **Medium:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 34th-66th percentile of residences/businesses adjacent to portal site **Low:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 33rd and lower percentile of residences/businesses adjacent to portal site	69	62	74
			LAND ACQUISITION & JURISDICTIONAL				
PS/PORT	KEY FACTOR LAND-Time9c	Relative Number of Acquisition Parcels	What is the estimated total number of private property acquisitions in the portal site?	**Scale:** Quantitative value based upon the number of parcels required	2 (R/W Connection)	2 (R/W Connection)	4 (R/W Connection)
PS/PORT	KEY FACTOR LAND-Time10c	Relative Level of Upland Property Development	What is the relative magnitude of construction and permanent impacts due to level of upland development and known level of pending development in portal acquisition site?	**High:** Highest range of construction and permanent impacts due to existing, and known pending, level of development **Middle:** Middle range of construction and permanent impacts due to existing, and known pending, level of development **Low:** Lowest range of construction and permanent impacts due to existing, and known pending, level of development	L	L	L
PS/PORT	KEY FACTOR LAND-Time3c	Legal Restrictions on Title	Are there existing legal restrictions to title in the portal acquisition site which would prevent or limit planned construction?	**High:** Title restrictions severely limit available useable land area and is difficult or impossible to remove **Medium:** Some title restrictions exist but can be removed with some effort or project can be adapted to accommodate **Low:** Title restrictions do not limit available useable land	L	L	L
PS/PORT	KEY FACTOR LAND-Time5c	Complexity of Relocations - Conveyance	How difficult and time-consuming will it be for occupants in the portal site areas to relocate?	**High:** Relocations include unique businesses with unique site requirements **Medium:** Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate **Low:** Relative level of complexity in occupant relocations, appears to be low	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-r	Residential Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-r	Residential Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-c	Commercial Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-c	Commercial Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
			FINANCIAL				
PS/PORT	KEY FACTOR LAND-Finan1b	Relative Cost of Site Acquisition and Relocation	What is the estimated total relative cost of private property acquisitions and relocations in the portal site area?	**High:** Highest cost **Medium:** Moderate cost **Low:** Lowest cost	M	M	M

ROUTE 9 EFFLUENT 195TH MATRIX

PORTAL 7

Description							
Component	**Code**	**Topic**	**Questions**	**Scale**	**Site A**	**Site B**	**Site C**
			ENGINEERING				
PS/PORT	KEY FACTOR ENGR-Constr1	Proximity to tunnel centerline	What is the distance from the portal site to the projected centerline of the tunnel ROW?	**Scale:** Quantitative value based on the distance from the projected tunnel centerline to the center of the portal site	500	350	350
PS/PORT	KEY FACTOR ENGR-Geo1	Landslide Potential or Steep Slopes	What is the extent of landslide potential or slopes greater than 30 degrees at the potential portal site?	**Scale:** Based on amount of potential portal area subject to landslide potential or slopes >30 degrees **High:** >30% of the total area has landslide potential or slopes >30 degrees **Medium:** <=30% of the total area has landslide potential or slopes >30 degrees **Low:** None of the area has landslide potential or slopes >30 degrees	Low	Low	Low
PS/PORT	KEY FACTOR ENGR-Acc	Construction and Maintenance Access	What is proximity of a major roadway to potential portal site for construction and maintenance access?	**Scale:** Based upon the relative difficulty of entering and exiting the portal site. **High:** Access through private property or residential neighborhood with small streets. **Medium:** Access from one direction only **Low:** Access from both directions	Low	Low	Low
PS/PORT	SECONDARY FACTOR ENGR-Constr	Site Ground/Surface Water Pretreatment and Disposal	What is the feasibility of reasonably pre-treating and disposing of ground and surface water related to construction activities at the portal site?	**Scale:** Quantitative value based upon the proximity of the nearest major storm drainage system to the potential portal site.	400	250	250
PS/PORT	SECONDARY FACTOR ENGR-Constr2	Feasibility of Making System Portal Connections	If applicable, at this portal site, what is the feasibility of connecting existing pipelines to the tunnel at this site?	**Scale:** Based upon the relative difficulty of making existing piping connections to the tunnel. **High:** Connections Difficult and Complex **Medium:** Connections of Average Difficulty **Low:** Connections Less Complex Than Typical	NA	NA	NA
			COMMUNITY-ENVIRONMENTAL				
PS/PORT	KEY FACTOR ENVR-CR	Archeological and Historic Resources	Are archeological /historic resources likely to be present at portal site?	**Scale:** Archeological/historic resources present at proposed portal site. **High:** Archeological/historical resources likely **Medium**: Archeological/historical resources possible **Low:** Archeological/historical resources unlikely	High	High	Medium
PS/PORT	KEY FACTOR ENVR- Bio1	Endangered Species Act Compliance – Conveyance	Does construction of portals disrupt or cross habitat areas for threatened/endangered/ candidate/state priority species?	**Scale**: Based on a qualitative answer regarding the potential temporary or permanent impacts to habitat areas for threatened / endangered / candidate / state priority species. **High:** Documented presence of special status species or their suitable habitat on the site or directly adjacent and low background activity in the vicinity of the site. **Low:** Documented presence of special status species or their suitable habitat near the site, but high background activity in the vicinity of the site and best management practices would reduce potential for impact. **No:** Lack of documented special status species or suitable habitat on or near the site.	No	No	Low
PS/PORT	KEY FACTOR ENVR-Bio 3	High Quality Upland Habitat	Does construction of portals disrupt or cross high quality upland habitat areas?	**Yes:** Construction of the portal is likely to disrupt or cross high quality upland habitat areas. **No:** Construction of the portal would not disrupt or cross high quality upland habitat areas.	No	No	No
PS/PORT	KEY FACTOR ENVR-Bio2	Wetlands	Would the portals affect wetlands?	**Scale:** Based on the potential temporary or permanent impact to wetlands or their associated buffers within the specific portal site. **High:** The portal site would permanently impact a Class 1 or 2 wetland **Medium**: The portal construction would temporarily impact a Class 1 or 2 wetland. **Low**: The portal would permanently impact a Class 3 or 4 wetland, or a Class 1 or 2 wetland buffer. **No:** The portal would temporarily impact a buffer or have no impact to wetlands or buffers.	No	No	Medium
PS/PORT	KEY FACTOR ENVR-Hydro	Surface Water Impacts	Would the construction of portals disrupt natural surface waters or their buffers?	**Scale:** Based on the potential of temporary or permanent impacts to surface water and/or their associated buffers at the potential portal site. **High:** It is likely that the construction at the portal site would impact natural surface water **Medium:** It is possible that the construction of the portal would impact natural surface water **Low:** It is unlikely that the construction of the portal would impact natural surface water **No:** The construction of the portal would not impact natural surface water	Low	Medium	High
PS/PORT	KEY FACTOR ENVR-Acc1	Traffic Disruption- Road & Streets	To what extent will construction of portals disrupt existing transportation facilities?	**High:** Potential to worsen LOS conditions on roadways with existing capacity limitations **Medium:** Construction access on local streets and arterials with no identified capacity problems **Low:** Available roadway network and/or rights-of-way allow minimal disruption of traffic flow.	High	High	High
PS/PORT	KEY FACTOR ENVR-Acc2	Traffic Disruption-Access	To what extent will portal construction disrupt local traffic access?	**High:** Construction of portals will require long term (construction period) detours or blocked local access **Medium:** Construction of portals will result in short-term (a few days) detours or blocked access **Low:** Construction of portals will not require detours or blocked local access	Low	Low	
PS/PORT	KEY FACTOR ENVR-Luc	Land Use Compatibility	To what extent will construction of portals disrupt adjacent land uses?	**QUANTITATIVE MEASUREMENT OF NUMBER OF STRUCTURES** **High:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 66th percentile and greater of businesses/residences adjacent to portal site **Medium:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 34th-66th percentile of residences/businesses adjacent to portal site **Low:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 33rd and lower percentile of residences/businesses adjacent to portal site	282	320	411
			LAND ACQUISITION & JURISDICTIONAL				
PS/PORT	KEY FACTOR LAND-Time9c	Relative Number of Acquisition Parcels	What is the estimated total number of private property acquisitions in the portal site?	**Scale:** Quantitative value based upon the number of parcels required	1	1	1 (1 Easement)
PS/PORT	KEY FACTOR LAND-Time10c	Relative Level of Upland Property Development	What is the relative magnitude of construction and permanent impacts due to level of upland development and known level of pending development in portal acquisition site?	**High:** Highest range of construction and permanent impacts due to existing, and known pending, level of development **Middle:** Middle range of construction and permanent impacts due to existing, and known pending, level of development **Low:** Lowest range of construction and permanent impacts due to existing, and known pending, level of development	M	M	L
PS/PORT	KEY FACTOR LAND-Time3c	Legal Restrictions on Title	Are there existing legal restrictions to title in the portal acquisition site which would prevent or limit planned construction?	**High:** Title restrictions severely limit available useable land area and is difficult or impossible to remove **Medium:** Some title restrictions exist but can be removed with some effort or project can be adapted to accommodate **Low:** Title restrictions do not limit available useable land	M	L	M
PS/PORT	KEY FACTOR LAND-Time5c	Complexity of Relocations - Conveyance	How difficult and time-consuming will it be for occupants in the portal site areas to relocate?	**High:** Relocations include unique businesses with unique site requirements **Medium:** Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate **Low:** Relative level of complexity in occupant relocations, appears to be low	M	M	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-r	Residential Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-r	Residential Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-c	Commercial Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-c	Commercial Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
			FINANCIAL				
PS/PORT	KEY FACTOR LAND-Finan1b	Relative Cost of Site Acquisition and Relocation	What is the estimated total relative cost of private property acquisitions and relocations in the portal site area?	**High:** Highest cost **Medium:** Moderate cost **Low:** Lowest cost	L	M	L

ROUTE 9 EFFLUENT 195TH MATRIX

PORTAL 27

Description							
Component	**Code**	**Topic**	**Questions**	**Scale**	**Site A**	**Site B**	**Site C**
			ENGINEERING				
PS/PORT	KEY FACTOR ENGR-Constr1	Proximity to tunnel centerline	What is the distance from the portal site to the projected centerline of the tunnel ROW?	**Scale:** Quantitative value based on the distance from the projected tunnel centerline to the center of the portal site	250	250	500
PS/PORT	KEY FACTOR ENGR-Geo1	Landslide Potential or Steep Slopes	What is the extent of landslide potential or slopes greater than 30 degrees at the potential portal site?	**Scale:** Based on amount of potential portal area subject to landslide potential or slopes >30 degrees **High:** >30% of the total area has landslide potential or slopes >30 degrees **Medium:** <=30% of the total area has landslide potential or slopes >30 degrees **Low:** None of the area has landslide potential or slopes >30 degrees	Low	Low	Low
PS/PORT	KEY FACTOR ENGR-Acc	Construction and Maintenance Access	What is proximity of a major roadway to potential portal site for construction and maintenance access?	**Scale:** Based upon the relative difficulty of entering and exiting the portal site. **High:** Access through private property or residential neighborhood with small streets. **Medium:** Access from one direction only **Low:** Access from both directions	Medium	Medium	High
PS/PORT	SECONDARY FACTOR ENGR-Constr	Site Ground/Surface Water Pretreatment and Disposal	What is the feasibility of reasonably pre-treating and disposing of ground and surface water related to construction activities at the portal site?	**Scale:** Quantitative value based upon the proximity of the nearest major storm drainage system to the potential portal site.	400	1250	180
PS/PORT	SECONDARY FACTOR ENGR-Constr2	Feasibility of Making System Portal Connections	If applicable, at this portal site, what is the feasibility of connecting existing pipelines to the tunnel at this site?	**Scale:** Based upon the relative difficulty of making existing piping connections to the tunnel. **High:** Connections Difficult and Complex **Medium:** Connections of Average Difficulty **Low:** Connections Less Complex Than Typical	NA	NA	NA
			COMMUNITY-ENVIRONMENTAL				
PS/PORT	KEY FACTOR ENVR-CR	Archeological and Historic Resources	Are archeological /historic resources likely to be present at portal site?	**Scale:** Archeological/historic resources present at proposed portal site. **High:** Archeological/historical resources likely **Medium**: Archeological/historical resources possible **Low:** Archeological/historical resources unlikely	High	Medium	Medium
PS/PORT	KEY FACTOR ENVR- Bio1	Endangered Species Act Compliance – Conveyance	Does construction of portals disrupt or cross habitat areas for threatened/endangered/ candidate/state priority species?	**Scale**: Based on a qualitative answer regarding the potential temporary or permanent impacts to habitat areas for threatened / endangered / candidate / state priority species. **High:** Documented presence of special status species or their suitable habitat on the site or directly adjacent and low background activity in the vicinity of the site. **Low:** Documented presence of special status species or their suitable habitat near the site, but high background activity in the vicinity of the site and best management practices would reduce potential for impact. **No:** Lack of documented special status species or suitable habitat on or near the site.	High	Low	High
PS/PORT	KEY FACTOR ENVR-Bio 3	High Quality Upland Habitat	Does construction of portals disrupt or cross high quality upland habitat areas?	**Yes:** Construction of the portal is likely to disrupt or cross high quality upland habitat areas. **No:** Construction of the portal would not disrupt or cross high quality upland habitat areas.	No	Yes	No
PS/PORT	KEY FACTOR ENVR-Bio2	Wetlands	Would the portals affect wetlands?	**Scale:** Based on the potential temporary or permanent impact to wetlands or their associated buffers within the specific portal site. **High:** The portal site would permanently impact a Class 1 or 2 wetland **Medium**: The portal construction would temporarily impact a Class 1 or 2 wetland. **Low**: The portal would permanently impact a Class 3 or 4 wetland, or a Class 1 or 2 wetland buffer. **No:** The portal would temporarily impact a buffer or have no impact to wetlands or buffers.	Low	Low	Medium
PS/PORT	KEY FACTOR ENVR-Hydro	Surface Water Impacts	Would the construction of portals disrupt natural surface waters or their buffers?	**Scale:** Based on the potential of temporary or permanent impacts to surface water and/or their associated buffers at the potential portal site. **High:** It is likely that the construction at the portal site would impact natural surface water **Medium:** It is possible that the construction of the portal would impact natural surface water **Low:** It is unlikely that the construction of the portal would impact natural surface water **No:** The construction of the portal would not impact natural surface water	Medium	Low	Medium
PS/PORT	KEY FACTOR ENVR-Acc1	Traffic Disruption- Road & Streets	To what extent will construction of portals disrupt existing transportation facilities?	**High:** Potential to worsen LOS conditions on roadways with existing capacity limitations **Medium:** Construction access on local streets and arterials with no identified capacity problems **Low:** Available roadway network and/or rights-of-way allow minimal disruption of traffic flow.	High	High	High
PS/PORT	KEY FACTOR ENVR-Acc2	Traffic Disruption-Access	To what extent will portal construction disrupt local traffic access?	**High:** Construction of portals will require long term (construction period) detours or blocked local access **Medium:** Construction of portals will result in short-term (a few days) detours or blocked access **Low:** Construction of portals will not require detours or blocked local access	Medium	Medium	High
PS/PORT	KEY FACTOR ENVR-Luc	Land Use Compatibility	To what extent will construction of portals disrupt adjacent land uses?	**QUANTITATIVE MEASUREMENT OF NUMBER OF STRUCTURES** **High:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 66th percentile and greater of businesses/residences adjacent to portal site **Medium:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 34th-66th percentile of residences/businesses adjacent to portal site **Low:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 33rd and lower percentile of residences/businesses adjacent to portal site	4	43	38
			LAND ACQUISITION & JURISDICTIONAL				
PS/PORT	KEY FACTOR LAND-Time9c	Relative Number of Acquisition Parcels	What is the estimated total number of private property acquisitions in the portal site?	**Scale:** Quantitative value based upon the number of parcels required	1	1	4 (+2 Easements)
PS/PORT	KEY FACTOR LAND-Time10c	Relative Level of Upland Property Development	What is the relative magnitude of construction and permanent impacts due to level of upland development and known level of pending development in portal acquisition site?	**High:** Highest range of construction and permanent impacts due to existing, and known pending, level of development **Middle:** Middle range of construction and permanent impacts due to existing, and known pending, level of development **Low:** Lowest range of construction and permanent impacts due to existing, and known pending, level of development	M	M	M
PS/PORT	KEY FACTOR LAND-Time3c	Legal Restrictions on Title	Are there existing legal restrictions to title in the portal acquisition site which would prevent or limit planned construction?	**High:** Title restrictions severely limit available useable land area and is difficult or impossible to remove **Medium:** Some title restrictions exist but can be removed with some effort or project can be adapted to accommodate **Low:** Title restrictions do not limit available useable land	L	L	L
PS/PORT	KEY FACTOR LAND-Time5c	Complexity of Relocations - Conveyance	How difficult and time-consuming will it be for occupants in the portal site areas to relocate?	**High:** Relocations include unique businesses with unique site requirements **Medium:** Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate **Low:** Relative level of complexity in occupant relocations, appears to be low	L	L	M
PS/PORT	SECONDARY FACTOR LAND-Cost8c-r	Residential Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	L	L	M
PS/PORT	SECONDARY FACTOR LAND-Cost8d-r	Residential Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-c	Commercial Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	M	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-c	Commercial Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
			FINANCIAL				
PS/PORT	KEY FACTOR LAND-Finan1b	Relative Cost of Site Acquisition and Relocation	What is the estimated total relative cost of private property acquisitions and relocations in the portal site area?	**High:** Highest cost **Medium:** Moderate cost **Low:** Lowest cost	M	M	M

ROUTE 9 EFFLUENT 195TH MATRIX

PORTAL 23

Description							
Component	**Code**	**Topic**	**Questions**	**Scale**	**Site A**	**Site D**	**Site F**
			ENGINEERING				
PS/PORT	KEY FACTOR ENGR-Constr1	Proximity to tunnel centerline	What is the distance from the portal site to the projected centerline of the tunnel ROW?	**Scale:** Quantitative value based on the distance from the projected tunnel centerline to the center of the portal site	1180	500	180
PS/PORT	KEY FACTOR ENGR-Geo1	Landslide Potential or Steep Slopes	What is the extent of landslide potential or slopes greater than 30 degrees at the potential portal site?	**Scale:** Based on amount of potential portal area subject to landslide potential or slopes >30 degrees **High:** >30% of the total area has landslide potential or slopes >30 degrees **Medium:** <=30% of the total area has landslide potential or slopes >30 degrees **Low:** None of the area has landslide potential or slopes >30 degrees	Low	Medium	Low
PS/PORT	KEY FACTOR ENGR-Acc	Construction and Maintenance Access	What is proximity of a major roadway to potential portal site for construction and maintenance access?	**Scale:** Based upon the relative difficulty of entering and exiting the portal site. **High:** Access through private property or residential neighborhood with small streets. **Medium:** Access from one direction only **Low:** Access from both directions	Low	Medium	Low
PS/PORT	SECONDARY FACTOR ENGR-Constr	Site Ground/Surface Water Pretreatment and Disposal	What is the feasibility of reasonably pre-treating and disposing of ground and surface water related to construction activities at the portal site?	**Scale:** Quantitative value based upon the proximity of the nearest major storm drainage system to the potential portal site.	180	180	180
PS/PORT	SECONDARY FACTOR ENGR-Constr2	Feasibility of Making System Portal Connections	If applicable, at this portal site, what is the feasibility of connecting existing pipelines to the tunnel at this site?	**Scale:** Based upon the relative difficulty of making existing piping connections to the tunnel. **High:** Connections Difficult and Complex **Medium:** Connections of Average Difficulty **Low:** Connections Less Complex Than Typical	NA	NA	NA
			COMMUNITY-ENVIRONMENTAL				
PS/PORT	KEY FACTOR ENVR-CR	Archeological and Historic Resources	Are archeological /historic resources likely to be present at portal site?	**Scale:** Archeological/historic resources present at proposed portal site. **High:** Archeological/historical resources likely **Medium**: Archeological/historical resources possible **Low:** Archeological/historical resources unlikely	Low	Low	Low
PS/PORT	KEY FACTOR ENVR- Bio1	Endangered Species Act Compliance – Conveyance	Does construction of portals disrupt or cross habitat areas for threatened/endangered/ candidate/state priority species?	**Scale**: Based on a qualitative answer regarding the potential temporary or permanent impacts to habitat areas for threatened / endangered / candidate / state priority species. **High:** Documented presence of special status species or their suitable habitat on the site or directly adjacent and low background activity in the vicinity of the site. **Low:** Documented presence of special status species or their suitable habitat near the site, but high background activity in the vicinity of the site and best management practices would reduce potential for impact. **No:** Lack of documented special status species or suitable habitat on or near the site.	No	Low	Low
PS/PORT	KEY FACTOR ENVR-Bio 3	High Quality Upland Habitat	Does construction of portals disrupt or cross high quality upland habitat areas?	**Yes:** Construction of the portal is likely to disrupt or cross high quality upland habitat areas. **No:** Construction of the portal would not disrupt or cross high quality upland habitat areas.	No	Yes	No
PS/PORT	KEY FACTOR ENVR-Bio2	Wetlands	Would the portals affect wetlands?	**Scale:** Based on the potential temporary or permanent impact to wetlands or their associated buffers within the specific portal site. **High:** The portal site would permanently impact a Class 1 or 2 wetland **Medium**: The portal construction would temporarily impact a Class 1 or 2 wetland. **Low**: The portal would permanently impact a Class 3 or 4 wetland, or a Class 1 or 2 wetland buffer. **No:** The portal would temporarily impact a buffer or have no impact to wetlands or buffers.	No	No	No
PS/PORT	KEY FACTOR ENVR-Hydro	Surface Water Impacts	Would the construction of portals disrupt natural surface waters or their buffers?	**Scale:** Based on the potential of temporary or permanent impacts to surface water and/or their associated buffers at the potential portal site. **High:** It is likely that the construction at the portal site would impact natural surface water **Medium:** It is possible that the construction of the portal would impact natural surface water **Low:** It is unlikely that the construction of the portal would impact natural surface water **No:** The construction of the portal would not impact natural surface water	No	No	No
PS/PORT	KEY FACTOR ENVR-Acc1	Traffic Disruption- Road & Streets	To what extent will construction of portals disrupt existing transportation facilities?	**High:** Potential to worsen LOS conditions on roadways with existing capacity limitations **Medium:** Construction access on local streets and arterials with no identified capacity problems **Low:** Available roadway network and/or rights-of-way allow minimal disruption of traffic flow.	Low	Low	Low
PS/PORT	KEY FACTOR ENVR-Acc2	Traffic Disruption-Access	To what extent will portal construction disrupt local traffic access?	**High:** Construction of portals will require long term (construction period) detours or blocked local access **Medium:** Construction of portals will result in short-term (a few days) detours or blocked access **Low:** Construction of portals will not require detours or blocked local access	Low	Medium	
PS/PORT	KEY FACTOR ENVR-Luc	Land Use Compatibility	To what extent will construction of portals disrupt adjacent land uses?	**QUANTITATIVE MEASUREMENT OF NUMBER OF STRUCTURES** **High:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 66th percentile and greater of businesses/residences adjacent to portal site **Medium:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 34th-66th percentile of residences/businesses adjacent to portal site **Low:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 33rd and lower percentile of residences/businesses adjacent to portal site	105	56	55
			LAND ACQUISITION & JURISDICTIONAL				
PS/PORT	KEY FACTOR LAND-Time9c	Relative Number of Acquisition Parcels	What is the estimated total number of private property acquisitions in the portal site?	**Scale:** Quantitative value based upon the number of parcels required	8	5 (R/W Access)	6
PS/PORT	KEY FACTOR LAND-Time10c	Relative Level of Upland Property Development	What is the relative magnitude of construction and permanent impacts due to level of upland development and known level of pending development in portal acquisition site?	**High:** Highest range of construction and permanent impacts due to existing, and known pending, level of development **Middle:** Middle range of construction and permanent impacts due to existing, and known pending, level of development **Low:** Lowest range of construction and permanent impacts due to existing, and known pending, level of development	H	M	M
PS/PORT	KEY FACTOR LAND-Time3c	Legal Restrictions on Title	Are there existing legal restrictions to title in the portal acquisition site which would prevent or limit planned construction?	**High:** Title restrictions severely limit available useable land area and is difficult or impossible to remove **Medium:** Some title restrictions exist but can be removed with some effort or project can be adapted to accommodate **Low:** Title restrictions do not limit available useable land	L	L	L
PS/PORT	KEY FACTOR LAND-Time5c	Complexity of Relocations - Conveyance	How difficult and time-consuming will it be for occupants in the portal site areas to relocate?	**High:** Relocations include unique businesses with unique site requirements **Medium:** Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate **Low:** Relative level of complexity in occupant relocations, appears to be low	M	M	M
PS/PORT	SECONDARY FACTOR LAND-Cost8c-r	Residential Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	M	M	M
PS/PORT	SECONDARY FACTOR LAND-Cost8d-r	Residential Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-c	Commercial Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	H	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-c	Commercial Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
			FINANCIAL				
PS/PORT	KEY FACTOR LAND-Finan1b	Relative Cost of Site Acquisition and Relocation	What is the estimated total relative cost of private property acquisitions and relocations in the portal site area?	**High:** Highest cost **Medium:** Moderate cost **Low:** Lowest cost	H	M	M

ROUTE 9 EFFLUENT 195TH MATRIX

PORTAL 19

Description							
Component	**Code**	**Topic**	**Questions**	**Scale**	**Site A**	**Site C**	**Site E**
			ENGINEERING				
PS/PORT	KEY FACTOR ENGR-Constr1	Proximity to tunnel centerline	What is the distance from the portal site to the projected centerline of the tunnel ROW?	**Scale:** Quantitative value based on the distance from the projected tunnel centerline to the center of the portal site	400	100	800
PS/PORT	KEY FACTOR ENGR-Geo1	Landslide Potential or Steep Slopes	What is the extent of landslide potential or slopes greater than 30 degrees at the potential portal site?	**Scale:** Based on amount of potential portal area subject to landslide potential or slopes >30 degrees **High:** >30% of the total area has landslide potential or slopes >30 degrees **Medium:** <=30% of the total area has landslide potential or slopes >30 degrees **Low:** None of the area has landslide potential or slopes >30 degrees	Low	Low	Low
PS/PORT	KEY FACTOR ENGR-Acc	Construction and Maintenance Access	What is proximity of a major roadway to potential portal site for construction and maintenance access?	**Scale:** Based upon the relative difficulty of entering and exiting the portal site. **High:** Access through private property or residential neighborhood with small streets. **Medium:** Access from one direction only **Low:** Access from both directions	High	Low	Medium
PS/PORT	SECONDARY FACTOR ENGR-Constr	Site Ground/Surface Water Pretreatment and Disposal	What is the feasibility of reasonably pre-treating and disposing of ground and surface water related to construction activities at the portal site?	**Scale:** Quantitative value based upon the proximity of the nearest major storm drainage system to the potential portal site.	1200	180	200
PS/PORT	SECONDARY FACTOR ENGR-Constr2	Feasibility of Making System Portal Connections	If applicable, at this portal site, what is the feasibility of connecting existing pipelines to the tunnel at this site?	**Scale:** Based upon the relative difficulty of making existing piping connections to the tunnel. **High:** Connections Difficult and Complex **Medium:** Connections of Average Difficulty **Low:** Connections Less Complex Than Typical	NA	NA	NA
			COMMUNITY-ENVIRONMENTAL				
PS/PORT	KEY FACTOR ENVR-CR	Archeological and Historic Resources	Are archeological /historic resources likely to be present at portal site?	**Scale:** Archeological/historic resources present at proposed portal site. **High:** Archeological/historical resources likely **Medium**: Archeological/historical resources possible **Low:** Archeological/historical resources unlikely	High	High	High
PS/PORT	KEY FACTOR ENVR- Bio1	Endangered Species Act Compliance – Conveyance	Does construction of portals disrupt or cross habitat areas for threatened/endangered/ candidate/state priority species?	**Scale**: Based on a qualitative answer regarding the potential temporary or permanent impacts to habitat areas for threatened / endangered / candidate / state priority species. **High:** Documented presence of special status species or their suitable habitat on the site or directly adjacent and low background activity in the vicinity of the site. **Low:** Documented presence of special status species or their suitable habitat near the site, but high background activity in the vicinity of the site and best management practices would reduce potential for impact. **No:** Lack of documented special status species or suitable habitat on or near the site.	Low (Bald Eagles utilize area, Pileated woodpecker and Great Blue Heron Habitat)	Low (Bald eagles and Great Blue Heron Utilize shoreline).	Low
PS/PORT	KEY FACTOR ENVR-Bio 3	High Quality Upland Habitat	Does construction of portals disrupt or cross high quality upland habitat areas?	**Yes:** Construction of the portal is likely to disrupt or cross high quality upland habitat areas. **No:** Construction of the portal would not disrupt or cross high quality upland habitat areas.	Yes	Yes	No
PS/PORT	KEY FACTOR ENVR-Bio2	Wetlands	Would the portals affect wetlands?	**Scale:** Based on the potential temporary or permanent impact to wetlands or their associated buffers within the specific portal site. **High:** The portal site would permanently impact a Class 1 or 2 wetland **Medium**: The portal construction would temporarily impact a Class 1 or 2 wetland. **Low**: The portal would permanently impact a Class 3 or 4 wetland, or a Class 1 or 2 wetland buffer. **No:** The portal would temporarily impact a buffer or have no impact to wetlands or buffers.	Low (Class 3 wetland impacts likely)	Low (Class 4 wetland impacts possible)	No
PS/PORT	KEY FACTOR ENVR-Hydro	Surface Water Impacts	Would the construction of portals disrupt natural surface waters or their buffers?	**Scale:** Based on the potential of temporary or permanent impacts to surface water and/or their associated buffers at the potential portal site. **High:** It is likely that the construction at the portal site would impact natural surface water **Medium:** It is possible that the construction of the portal would impact natural surface water **Low:** It is unlikely that the construction of the portal would impact natural surface water **No:** The construction of the portal would not impact natural surface water	Medium	Medium	Medium
PS/PORT	KEY FACTOR ENVR-Acc1	Traffic Disruption- Road & Streets	To what extent will construction of portals disrupt existing transportation facilities?	**High:** Potential to worsen LOS conditions on roadways with existing capacity limitations **Medium:** Construction access on local streets and arterials with no identified capacity problems **Low:** Available roadway network and/or rights-of-way allow minimal disruption of traffic flow.	Medium	Medium	Medium
PS/PORT	KEY FACTOR ENVR-Acc2	Traffic Disruption-Access	To what extent will portal construction disrupt local traffic access?	**High:** Construction of portals will require long term (construction period) detours or blocked local access **Medium:** Construction of portals will result in short-term (a few days) detours or blocked access **Low:** Construction of portals will not require detours or blocked local access	High	Low	
PS/PORT	KEY FACTOR ENVR-Luc	Land Use Compatibility	To what extent will construction of portals disrupt adjacent land uses?	**QUANTITATIVE MEASUREMENT OF NUMBER OF STRUCTURES** **High:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 66th percentile and greater of businesses/residences adjacent to portal site **Medium:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 34th-66th percentile of residences/businesses adjacent to portal site **Low:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 33rd and lower percentile of residences/businesses adjacent to portal site	16	15	48
			LAND ACQUISITION & JURISDICTIONAL				
PS/PORT	KEY FACTOR LAND-Time9c	Relative Number of Acquisition Parcels	What is the estimated total number of private property acquisitions in the portal site?	**Scale:** Quantitative value based upon the number of parcels required	1 (1 Easement)	1	1
PS/PORT	KEY FACTOR LAND-Time10c	Relative Level of Upland Property Development	What is the relative magnitude of construction and permanent impacts due to level of upland development and known level of pending development in portal acquisition site?	**High:** Highest range of construction and permanent impacts due to existing, and known pending, level of development **Middle:** Middle range of construction and permanent impacts due to existing, and known pending, level of development **Low:** Lowest range of construction and permanent impacts due to existing, and known pending, level of development	L	L	L
PS/PORT	KEY FACTOR LAND-Time3c	Legal Restrictions on Title	Are there existing legal restrictions to title in the portal acquisition site which would prevent or limit planned construction?	**High:** Title restrictions severely limit available useable land area and is difficult or impossible to remove **Medium:** Some title restrictions exist but can be removed with some effort or project can be adapted to accommodate **Low:** Title restrictions do not limit available useable land	L	L	L
PS/PORT	KEY FACTOR LAND-Time5c	Complexity of Relocations - Conveyance	How difficult and time-consuming will it be for occupants in the portal site areas to relocate?	**High:** Relocations include unique businesses with unique site requirements **Medium:** Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate **Low:** Relative level of complexity in occupant relocations, appears to be low	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-r	Residential Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	M	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-r	Residential Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-c	Commercial Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	L	M	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-c	Commercial Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
			FINANCIAL				
PS/PORT	KEY FACTOR LAND-Finan1b	Relative Cost of Site Acquisition and Relocation	What is the estimated total relative cost of private property acquisitions and relocations in the portal site area?	**High:** Highest cost **Medium:** Moderate cost **Low:** Lowest cost	M	M	L

UNOCAL MATRIX

PORTAL 14

Description							
Component	**Code**	**Topic**	**Questions**	**Scale**	**Site A**	**Site B**	**Site D**
			ENGINEERING				
PS/PORT	KEY FACTOR ENGR-Constr1	Proximity to tunnel centerline	What is the distance from the portal site to the projected centerline of the tunnel ROW?	**Scale:** Quantitative value based on the distance from the projected tunnel centerline to the center of the portal site	1250	1250	2800
PS/PORT	KEY FACTOR ENGR-Geo1	Landslide Potential or Steep Slopes	What is the extent of landslide potential or slopes greater than 30 degrees at the potential portal site?	**Scale:** Based on amount of potential portal area subject to landslide potential or slopes >30 degrees **High:** >30% of the total area has landslide potential or slopes >30 degrees **Medium:** <=30% of the total area has landslide potential or slopes >30 degrees **Low:** None of the area has landslide potential or slopes >30 degrees	Low	Low	Low
PS/PORT	KEY FACTOR ENGR-Acc	Construction and Maintenance Access	What is proximity of a major roadway to potential portal site for construction and maintenance access?	**Scale:** Based upon the relative difficulty of entering and exiting the portal site. **High:** Access through private property or residential neighborhood with small streets. **Medium:** Access from one direction only **Low:** Access from both directions	Low	Low	Low
PS/PORT	SECONDARY FACTOR ENGR-Constr	Site Ground/Surface Water Pretreatment and Disposal	What is the feasibility of reasonably pre-treating and disposing of ground and surface water related to construction activities at the portal site?	**Scale:** Quantitative value based upon the proximity of the nearest major storm drainage system to the potential portal site.	180	180	100
PS/PORT	SECONDARY FACTOR ENGR-Constr2	Feasibility of Making System Portal Connections	If applicable, at this portal site, what is the feasibility of connecting existing pipelines to the tunnel at this site?	**Scale:** Based upon the relative difficulty of making existing piping connections to the tunnel. **High:** Connections Difficult and Complex **Medium:** Connections of Average Difficulty **Low:** Connections Less Complex Than Typical	Medium	Medium	High
			COMMUNITY-ENVIRONMENTAL				
PS/PORT	KEY FACTOR ENVR-CR	Archeological and Historic Resources	Are archeological /historic resources likely to be present at portal site?	**Scale:** Archeological/historic resources present at proposed portal site. **High:** Archeological/historical resources likely **Medium**: Archeological/historical resources possible **Low:** Archeological/historical resources unlikely	High	High	High
PS/PORT	KEY FACTOR ENVR- Bio1	Endangered Species Act Compliance – Conveyance	Does construction of portals disrupt or cross habitat areas for threatened/endangered/ candidate/state priority species?	**Scale**: Based on a qualitative answer regarding the potential temporary or permanent impacts to habitat areas for threatened / endangered / candidate / state priority species. **High:** Documented presence of special status species or their suitable habitat on the site or directly adjacent and low background activity in the vicinity of the site. **Low:** Documented presence of special status species or their suitable habitat near the site, but high background activity in the vicinity of the site and best management practices would reduce potential for impact. **No:** Lack of documented special status species or suitable habitat on or near the site.	Low	Low	Low
PS/PORT	KEY FACTOR ENVR-Bio 3	High Quality Upland Habitat	Does construction of portals disrupt or cross high quality upland habitat areas?	**Yes:** Construction of the portal is likely to disrupt or cross high quality upland habitat areas. **No:** Construction of the portal would not disrupt or cross high quality upland habitat areas.	No	No	No
PS/PORT	KEY FACTOR ENVR-Bio2	Wetlands	Would the portals affect wetlands?	**Scale:** Based on the potential temporary or permanent impact to wetlands or their associated buffers within the specific portal site. **High:** The portal site would permanently impact a Class 1 or 2 wetland **Medium**: The portal construction would temporarily impact a Class 1 or 2 wetland. **Low**: The portal would permanently impact a Class 3 or 4 wetland, or a Class 1 or 2 wetland buffer. **No:** The portal would temporarily impact a buffer or have no impact to wetlands or buffers.	No	No	No
PS/PORT	KEY FACTOR ENVR-Hydro	Surface Water Impacts	Would the construction of portals disrupt natural surface waters or their buffers?	**Scale:** Based on the potential of temporary or permanent impacts to surface water and/or their associated buffers at the potential portal site. **High:** It is likely that the construction at the portal site would impact natural surface water **Medium:** It is possible that the construction of the portal would impact natural surface water **Low:** It is unlikely that the construction of the portal would impact natural surface water **No:** The construction of the portal would not impact natural surface water	Medium	Medium	Low
PS/PORT	KEY FACTOR ENVR-Acc1	Traffic Disruption- Road & Streets	To what extent will construction of portals disrupt existing transportation facilities?	**High:** Potential to worsen LOS conditions on roadways with existing capacity limitations **Medium:** Construction access on local streets and arterials with no identified capacity problems **Low:** Available roadway network and/or rights-of-way allow minimal disruption of traffic flow.	Medium	Medium	Medium
PS/PORT	KEY FACTOR ENVR-Acc2	Traffic Disruption-Access	To what extent will portal construction disrupt local traffic access?	**High:** Construction of portals will require long term (construction period) detours or blocked local access **Medium:** Construction of portals will result in short-term (a few days) detours or blocked access **Low:** Construction of portals will not require detours or blocked local access	Medium	Medium	Medium
PS/PORT	KEY FACTOR ENVR-Luc	Land Use Compatibility	To what extent will construction of portals disrupt adjacent land uses?	**QUANTITATIVE MEASUREMENT OF NUMBER OF STRUCTURES** **High:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 66th percentile and greater of businesses/residences adjacent to portal site **Medium:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 34th-66th percentile of residences/businesses adjacent to portal site **Low:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 33rd and lower percentile of residences/businesses adjacent to portal site	5	11	1
			LAND ACQUISITION & JURISDICTIONAL				
PS/PORT	KEY FACTOR LAND-Time9c	Relative Number of Acquisition Parcels	What is the estimated total number of private property acquisitions in the portal site?	**Scale:** Quantitative value based upon the number of parcels required	1	1	1
PS/PORT	KEY FACTOR LAND-Time10c	Relative Level of Upland Property Development	What is the relative magnitude of construction and permanent impacts due to level of upland development and known level of pending development in portal acquisition site?	**High:** Highest range of construction and permanent impacts due to existing, and known pending, level of development **Middle:** Middle range of construction and permanent impacts due to existing, and known pending, level of development **Low:** Lowest range of construction and permanent impacts due to existing, and known pending, level of development	L	L	H
PS/PORT	KEY FACTOR LAND-Time3c	Legal Restrictions on Title	Are there existing legal restrictions to title in the portal acquisition site which would prevent or limit planned construction?	**High:** Title restrictions severely limit available useable land area and is difficult or impossible to remove **Medium:** Some title restrictions exist but can be removed with some effort or project can be adapted to accommodate **Low:** Title restrictions do not limit available useable land	M	M	L
PS/PORT	KEY FACTOR LAND-Time5c	Complexity of Relocations - Conveyance	How difficult and time-consuming will it be for occupants in the portal site areas to relocate?	**High:** Relocations include unique businesses with unique site requirements **Medium:** Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate **Low:** Relative level of complexity in occupant relocations, appears to be low	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-r	Residential Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-r	Residential Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-c	Commercial Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	L	L	M
PS/PORT	SECONDARY FACTOR LAND-Cost8d-c	Commercial Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
			FINANCIAL				
PS/PORT	KEY FACTOR LAND-Finan1b	Relative Cost of Site Acquisition and Relocation	What is the estimated total relative cost of private property acquisitions and relocations in the portal site area?	**High:** Highest cost **Medium:** Moderate cost **Low:** Lowest cost	L	L	M

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PORTAL 13

Description							
Component	**Code**	**Topic**	**Questions**	**Scale**	**Site A**	**Site B**	**Site C**
			ENGINEERING				
PS/PORT	KEY FACTOR ENGR-Constr1	Proximity to tunnel centerline	What is the distance from the portal site to the projected centerline of the tunnel ROW?	**Scale:** Quantitative value based on the distance from the projected tunnel centerline to the center of the portal site	0	800	0
PS/PORT	KEY FACTOR ENGR-Geo1	Landslide Potential or Steep Slopes	What is the extent of landslide potential or slopes greater than 30 degrees at the potential portal site?	**Scale:** Based on amount of potential portal area subject to landslide potential or slopes >30 degrees **High:** >30% of the total area has landslide potential or slopes >30 degrees **Medium:** <=30% of the total area has landslide potential or slopes >30 degrees **Low:** None of the area has landslide potential or slopes >30 degrees	Low	Low	Low
PS/PORT	KEY FACTOR ENGR-Acc	Construction and Maintenance Access	What is proximity of a major roadway to potential portal site for construction and maintenance access?	**Scale:** Based upon the relative difficulty of entering and exiting the portal site. **High:** Access through private property or residential neighborhood with small streets. **Medium:** Access from one direction only **Low:** Access from both directions	Low	Low	Low
PS/PORT	SECONDARY FACTOR ENGR-Constr	Site Ground/Surface Water Pretreatment and Disposal	What is the feasibility of reasonably pre-treating and disposing of ground and surface water related to construction activities at the portal site?	**Scale:** Quantitative value based upon the proximity of the nearest major storm drainage system to the potential portal site.	180	180	750
PS/PORT	SECONDARY FACTOR ENGR-Constr2	Feasibility of Making System Portal Connections	If applicable, at this portal site, what is the feasibility of connecting existing pipelines to the tunnel at this site?	**Scale:** Based upon the relative difficulty of making existing piping connections to the tunnel. **High:** Connections Difficult and Complex **Medium:** Connections of Average Difficulty **Low:** Connections Less Complex Than Typical	NA	NA	NA
			COMMUNITY-ENVIRONMENTAL				
PS/PORT	KEY FACTOR ENVR-CR	Archeological and Historic Resources	Are archeological /historic resources likely to be present at portal site?	**Scale:** Archeological/historic resources present at proposed portal site. **High:** Archeological/historical resources likely **Medium**: Archeological/historical resources possible **Low:** Archeological/historical resources unlikely	High	High	High
PS/PORT	KEY FACTOR ENVR- Bio1	Endangered Species Act Compliance – Conveyance	Does construction of portals disrupt or cross habitat areas for threatened/endangered/ candidate/state priority species?	**Scale**: Based on a qualitative answer regarding the potential temporary or permanent impacts to habitat areas for threatened / endangered / candidate / state priority species. **High:** Documented presence of special status species or their suitable habitat on the site or directly adjacent and low background activity in the vicinity of the site. **Low:** Documented presence of special status species or their suitable habitat near the site, but high background activity in the vicinity of the site and best management practices would reduce potential for impact. **No:** Lack of documented special status species or suitable habitat on or near the site.	Low	Low	No
PS/PORT	KEY FACTOR ENVR-Bio 3	High Quality Upland Habitat	Does construction of portals disrupt or cross high quality upland habitat areas?	**Yes:** Construction of the portal is likely to disrupt or cross high quality upland habitat areas. **No:** Construction of the portal would not disrupt or cross high quality upland habitat areas.	No	No	No
PS/PORT	KEY FACTOR ENVR-Bio2	Wetlands	Would the portals affect wetlands?	**Scale:** Based on the potential temporary or permanent impact to wetlands or their associated buffers within the specific portal site. **High:** The portal site would permanently impact a Class 1 or 2 wetland **Medium**: The portal construction would temporarily impact a Class 1 or 2 wetland. **Low**: The portal would permanently impact a Class 3 or 4 wetland, or a Class 1 or 2 wetland buffer. **No:** The portal would temporarily impact a buffer or have no impact to wetlands or buffers.	No	No	No
PS/PORT	KEY FACTOR ENVR-Hydro	Surface Water Impacts	Would the construction of portals disrupt natural surface waters or their buffers?	**Scale:** Based on the potential of temporary or permanent impacts to surface water and/or their associated buffers at the potential portal site. **High:** It is likely that the construction at the portal site would impact natural surface water **Medium:** It is possible that the construction of the portal would impact natural surface water **Low:** It is unlikely that the construction of the portal would impact natural surface water **No:** The construction of the portal would not impact natural surface water	Medium	Low	Low
PS/PORT	KEY FACTOR ENVR-Acc1	Traffic Disruption- Road & Streets	To what extent will construction of portals disrupt existing transportation facilities?	**High:** Potential to worsen LOS conditions on roadways with existing capacity limitations **Medium:** Construction access on local streets and arterials with no identified capacity problems **Low:** Available roadway network and/or rights-of-way allow minimal disruption of traffic flow.	High	High	High
PS/PORT	KEY FACTOR ENVR-Acc2	Traffic Disruption-Access	To what extent will portal construction disrupt local traffic access?	**High:** Construction of portals will require long term (construction period) detours or blocked local access **Medium:** Construction of portals will result in short-term (a few days) detours or blocked access **Low:** Construction of portals will not require detours or blocked local access	Medium	Medium	Medium
PS/PORT	KEY FACTOR ENVR-Luc	Land Use Compatibility	To what extent will construction of portals disrupt adjacent land uses?	**QUANTITATIVE MEASUREMENT OF NUMBER OF STRUCTURES** **High:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 66th percentile and greater of businesses/residences adjacent to portal site **Medium:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 34th-66th percentile of residences/businesses adjacent to portal site **Low:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 33rd and lower percentile of residences/businesses adjacent to portal site	29	62	23
			LAND ACQUISITION & JURISDICTIONAL				
PS/PORT	KEY FACTOR LAND-Time9c	Relative Number of Acquisition Parcels	What is the estimated total number of private property acquisitions in the portal site?	**Scale:** Quantitative value based upon the number of parcels required	3	2	2
PS/PORT	KEY FACTOR LAND-Time10c	Relative Level of Upland Property Development	What is the relative magnitude of construction and permanent impacts due to level of upland development and known level of pending development in portal acquisition site?	**High:** Highest range of construction and permanent impacts due to existing, and known pending, level of development **Middle:** Middle range of construction and permanent impacts due to existing, and known pending, level of development **Low:** Lowest range of construction and permanent impacts due to existing, and known pending, level of development	L	H	H
PS/PORT	KEY FACTOR LAND-Time3c	Legal Restrictions on Title	Are there existing legal restrictions to title in the portal acquisition site which would prevent or limit planned construction?	**High:** Title restrictions severely limit available useable land area and is difficult or impossible to remove **Medium:** Some title restrictions exist but can be removed with some effort or project can be adapted to accommodate **Low:** Title restrictions do not limit available useable land	M	L	L
PS/PORT	KEY FACTOR LAND-Time5c	Complexity of Relocations - Conveyance	How difficult and time-consuming will it be for occupants in the portal site areas to relocate?	**High:** Relocations include unique businesses with unique site requirements **Medium:** Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate **Low:** Relative level of complexity in occupant relocations, appears to be low	L	M	M
PS/PORT	SECONDARY FACTOR LAND-Cost8c-r	Residential Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-r	Residential Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-c	Commercial Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	L	M	M
PS/PORT	SECONDARY FACTOR LAND-Cost8d-c	Commercial Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
			FINANCIAL				
PS/PORT	KEY FACTOR LAND-Finan1b	Relative Cost of Site Acquisition and Relocation	What is the estimated total relative cost of private property acquisitions and relocations in the portal site area?	**High:** Highest cost **Medium:** Moderate cost **Low:** Lowest cost	L	H	H

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PORTAL 12

Description						
Component	**Code**	**Topic**	**Questions**	**Scale**	**Site C**	**Site E**
			ENGINEERING			
PS/PORT	KEY FACTOR ENGR-Constr1	Proximity to tunnel centerline	What is the distance from the portal site to the projected centerline of the tunnel ROW?	**Scale:** Quantitative value based on the distance from the projected tunnel centerline to the center of the portal site	0	500
PS/PORT	KEY FACTOR ENGR-Geo1	Landslide Potential or Steep Slopes	What is the extent of landslide potential or slopes greater than 30 degrees at the potential portal site?	**Scale:** Based on amount of potential portal area subject to landslide potential or slopes >30 degrees **High:** >30% of the total area has landslide potential or slopes >30 degrees **Medium:** <=30% of the total area has landslide potential or slopes >30 degrees **Low:** None of the area has landslide potential or slopes >30 degrees	Low	Low
PS/PORT	KEY FACTOR ENGR-Acc	Construction and Maintenance Access	What is proximity of a major roadway to potential portal site for construction and maintenance access?	**Scale:** Based upon the relative difficulty of entering and exiting the portal site. **High:** Access through private property or residential neighborhood with small streets. **Medium:** Access from one direction only **Low:** Access from both directions	Low	Medium
PS/PORT	SECONDARY FACTOR ENGR-Constr	Site Ground/Surface Water Pretreatment and Disposal	What is the feasibility of reasonably pre-treating and disposing of ground and surface water related to construction activities at the portal site?	**Scale:** Quantitative value based upon the proximity of the nearest major storm drainage system to the potential portal site.	500	500
PS/PORT	SECONDARY FACTOR ENGR-Constr2	Feasibility of Making System Portal Connections	If applicable, at this portal site, what is the feasibility of connecting existing pipelines to the tunnel at this site?	**Scale:** Based upon the relative difficulty of making existing piping connections to the tunnel. **High:** Connections Difficult and Complex **Medium:** Connections of Average Difficulty **Low:** Connections Less Complex Than Typical	NA	NA
			COMMUNITY-ENVIRONMENTAL			
PS/PORT	KEY FACTOR ENVR-CR	Archeological and Historic Resources	Are archeological /historic resources likely to be present at portal site?	**Scale:** Archeological/historic resources present at proposed portal site. **High:** Archeological/historical resources likely **Medium**: Archeological/historical resources possible **Low:** Archeological/historical resources unlikely	High	High
PS/PORT	KEY FACTOR ENVR- Bio1	Endangered Species Act Compliance – Conveyance	Does construction of portals disrupt or cross habitat areas for threatened/endangered/ candidate/state priority species?	**Scale**: Based on a qualitative answer regarding the potential temporary or permanent impacts to habitat areas for threatened / endangered / candidate / state priority species. **High:** Documented presence of special status species or their suitable habitat on the site or directly adjacent and low background activity in the vicinity of the site. **Low:** Documented presence of special status species or their suitable habitat near the site, but high background activity in the vicinity of the site and best management practices would reduce potential for impact. **No:** Lack of documented special status species or suitable habitat on or near the site.	Low	Low
PS/PORT	KEY FACTOR ENVR-Bio 3	High Quality Upland Habitat	Does construction of portals disrupt or cross high quality upland habitat areas?	**Yes:** Construction of the portal is likely to disrupt or cross high quality upland habitat areas. **No:** Construction of the portal would not disrupt or cross high quality upland habitat areas.	No	No
PS/PORT	KEY FACTOR ENVR-Bio2	Wetlands	Would the portals affect wetlands?	**Scale:** Based on the potential temporary or permanent impact to wetlands or their associated buffers within the specific portal site. **High:** The portal site would permanently impact a Class 1 or 2 wetland **Medium**: The portal construction would temporarily impact a Class 1 or 2 wetland. **Low**: The portal would permanently impact a Class 3 or 4 wetland, or a Class 1 or 2 wetland buffer. **No:** The portal would temporarily impact a buffer or have no impact to wetlands or buffers.	Low	Low
PS/PORT	KEY FACTOR ENVR-Hydro	Surface Water Impacts	Would the construction of portals disrupt natural surface waters or their buffers?	**Scale:** Based on the potential of temporary or permanent impacts to surface water and/or their associated buffers at the potential portal site. **High:** It is likely that the construction at the portal site would impact natural surface water **Medium:** It is possible that the construction of the portal would impact natural surface water **Low:** It is unlikely that the construction of the portal would impact natural surface water **No:** The construction of the portal would not impact natural surface water	Medium	Medium
PS/PORT	KEY FACTOR ENVR-Acc1	Traffic Disruption- Road & Streets	To what extent will construction of portals disrupt existing transportation facilities?	**High:** Potential to worsen LOS conditions on roadways with existing capacity limitations **Medium:** Construction access on local streets and arterials with no identified capacity problems **Low:** Available roadway network and/or rights-of-way allow minimal disruption of traffic flow.	Medium	Medium
PS/PORT	KEY FACTOR ENVR-Acc2	Traffic Disruption-Access	To what extent will portal construction disrupt local traffic access?	**High:** Construction of portals will require long term (construction period) detours or blocked local access **Medium:** Construction of portals will result in short-term (a few days) detours or blocked access **Low:** Construction of portals will not require detours or blocked local access	Medium	Medium
PS/PORT	KEY FACTOR ENVR-Luc	Land Use Compatibility	To what extent will construction of portals disrupt adjacent land uses?	**QUANTITATIVE MEASUREMENT OF NUMBER OF STRUCTURES** **High:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 66th percentile and greater of businesses/residences adjacent to portal site **Medium:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 34th-66th percentile of residences/businesses adjacent to portal site **Low:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 33rd and lower percentile of residences/businesses adjacent to portal site	124	21
			LAND ACQUISITION & JURISDICTIONAL			
PS/PORT	KEY FACTOR LAND-Time9c	Relative Number of Acquisition Parcels	What is the estimated total number of private property acquisitions in the portal site?	**Scale:** Quantitative value based upon the number of parcels required	2	2
PS/PORT	KEY FACTOR LAND-Time10c	Relative Level of Upland Property Development	What is the relative magnitude of construction and permanent impacts due to level of upland development and known level of pending development in portal acquisition site?	**High:** Highest range of construction and permanent impacts due to existing, and known pending, level of development **Middle:** Middle range of construction and permanent impacts due to existing, and known pending, level of development **Low:** Lowest range of construction and permanent impacts due to existing, and known pending, level of development	L	L
PS/PORT	KEY FACTOR LAND-Time3c	Legal Restrictions on Title	Are there existing legal restrictions to title in the portal acquisition site which would prevent or limit planned construction?	**High:** Title restrictions severely limit available useable land area and is difficult or impossible to remove **Medium:** Some title restrictions exist but can be removed with some effort or project can be adapted to accommodate **Low:** Title restrictions do not limit available useable land	L	L
PS/PORT	KEY FACTOR LAND-Time5c	Complexity of Relocations - Conveyance	How difficult and time-consuming will it be for occupants in the portal site areas to relocate?	**High:** Relocations include unique businesses with unique site requirements **Medium:** Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate **Low:** Relative level of complexity in occupant relocations, appears to be low	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-r	Residential Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-r	Residential Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-c	Commercial Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-c	Commercial Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L
			FINANCIAL			
PS/PORT	KEY FACTOR LAND-Finan1b	Relative Cost of Site Acquisition and Relocation	What is the estimated total relative cost of private property acquisitions and relocations in the portal site area?	**High:** Highest cost **Medium:** Moderate cost **Low:** Lowest cost	M	M

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PORTAL 11							
Description							
Component	**Code**	**Topic**	**Questions**	**Scale**	**Site A**	**Site B**	**Site C**
			ENGINEERING				
PS/PORT	KEY FACTOR ENGR-Constr1	Proximity to tunnel centerline	What is the distance from the portal site to the projected centerline of the tunnel ROW?	**Scale:** Quantitative value based on the distance from the projected tunnel centerline to the center of the portal site	0	300	850
PS/PORT	KEY FACTOR ENGR-Geo1	Landslide Potential or Steep Slopes	What is the extent of landslide potential or slopes greater than 30 degrees at the potential portal site?	**Scale:** Based on amount of potential portal area subject to landslide potential or slopes >30 degrees **High:** >30% of the total area has landslide potential or slopes >30 degrees **Medium:** <=30% of the total area has landslide potential or slopes >30 degrees **Low:** None of the area has landslide potential or slopes >30 degrees	Low	Low	Low
PS/PORT	KEY FACTOR ENGR-Acc	Construction and Maintenance Access	What is proximity of a major roadway to potential portal site for construction and maintenance access?	**Scale:** Based upon the relative difficulty of entering and exiting the portal site. **High:** Access through private property or residential neighborhood with small streets. **Medium:** Access from one direction only **Low:** Access from both directions	Low	Low	Medium
PS/PORT	SECONDARY FACTOR ENGR-Constr	Site Ground/Surface Water Pretreatment and Disposal	What is the feasibility of reasonably pre-treating and disposing of ground and surface water related to construction activities at the portal site?	**Scale:** Quantitative value based upon the proximity of the nearest major storm drainage system to the potential portal site.	850	600	1500
PS/PORT	SECONDARY FACTOR ENGR-Constr2	Feasibility of Making System Portal Connections	If applicable, at this portal site, what is the feasibility of connecting existing pipelines to the tunnel at this site?	**Scale:** Based upon the relative difficulty of making existing piping connections to the tunnel. **High:** Connections Difficult and Complex **Medium:** Connections of Average Difficulty **Low:** Connections Less Complex Than Typical	Medium	Low	High
			COMMUNITY-ENVIRONMENTAL				
PS/PORT	KEY FACTOR ENVR-CR	Archeological and Historic Resources	Are archeological /historic resources likely to be present at portal site?	**Scale:** Archeological/historic resources present at proposed portal site. **High:** Archeological/historical resources likely **Medium**: Archeological/historical resources possible **Low:** Archeological/historical resources unlikely	High	High	High
PS/PORT	KEY FACTOR ENVR- Bio1	Endangered Species Act Compliance – Conveyance	Does construction of portals disrupt or cross habitat areas for threatened/endangered/ candidate/state priority species?	**Scale**: Based on a qualitative answer regarding the potential temporary or permanent impacts to habitat areas for threatened / endangered / candidate / state priority species. **High:** Documented presence of special status species or their suitable habitat on the site or directly adjacent and low background activity in the vicinity of the site. **Low:** Documented presence of special status species or their suitable habitat near the site, but high background activity in the vicinity of the site and best management practices would reduce potential for impact. **No:** Lack of documented special status species or suitable habitat on or near the site.	No	Low	No
PS/PORT	KEY FACTOR ENVR-Bio 3	High Quality Upland Habitat	Does construction of portals disrupt or cross high quality upland habitat areas?	**Yes:** Construction of the portal is likely to disrupt or cross high quality upland habitat areas. **No:** Construction of the portal would not disrupt or cross high quality upland habitat areas.	No	No	No
PS/PORT	KEY FACTOR ENVR-Bio2	Wetlands	Would the portals affect wetlands?	**Scale:** Based on the potential temporary or permanent impact to wetlands or their associated buffers within the specific portal site. **High:** The portal site would permanently impact a Class 1 or 2 wetland **Medium**: The portal construction would temporarily impact a Class 1 or 2 wetland. **Low**: The portal would permanently impact a Class 3 or 4 wetland, or a Class 1 or 2 wetland buffer. **No:** The portal would temporarily impact a buffer or have no impact to wetlands or buffers.	No	No	No
PS/PORT	KEY FACTOR ENVR-Hydro	Surface Water Impacts	Would the construction of portals disrupt natural surface waters or their buffers?	**Scale:** Based on the potential of temporary or permanent impacts to surface water and/or their associated buffers at the potential portal site. **High:** It is likely that the construction at the portal site would impact natural surface water **Medium:** It is possible that the construction of the portal would impact natural surface water **Low:** It is unlikely that the construction of the portal would impact natural surface water **No:** The construction of the portal would not impact natural surface water	No	Low	No
PS/PORT	KEY FACTOR ENVR-Acc1	Traffic Disruption- Road & Streets	To what extent will construction of portals disrupt existing transportation facilities?	**High:** Potential to worsen LOS conditions on roadways with existing capacity limitations **Medium:** Construction access on local streets and arterials with no identified capacity problems **Low:** Available roadway network and/or rights-of-way allow minimal disruption of traffic flow.	High	High	High
PS/PORT	KEY FACTOR ENVR-Acc2	Traffic Disruption-Access	To what extent will portal construction disrupt local traffic access?	**High:** Construction of portals will require long term (construction period) detours or blocked local access **Medium:** Construction of portals will result in short-term (a few days) detours or blocked access **Low:** Construction of portals will not require detours or blocked local access	Medium	Medium	Medium
PS/PORT	KEY FACTOR ENVR-Luc	Land Use Compatibility	To what extent will construction of portals disrupt adjacent land uses?	**QUANTITATIVE MEASUREMENT OF NUMBER OF STRUCTURES** **High:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 66th percentile and greater of businesses/residences adjacent to portal site **Medium:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 34th-66th percentile of residences/businesses adjacent to portal site **Low:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 33rd and lower percentile of residences/businesses adjacent to portal site	20	13	38
			LAND ACQUISITION & JURISDICTIONAL				
PS/PORT	KEY FACTOR LAND-Time9c	Relative Number of Acquisition Parcels	What is the estimated total number of private property acquisitions in the portal site?	**Scale:** Quantitative value based upon the number of parcels required	3 (1 Easement)	1 (2 Easement)	2 (R/W Access)
PS/PORT	KEY FACTOR LAND-Time10c	Relative Level of Upland Property Development	What is the relative magnitude of construction and permanent impacts due to level of upland development and known level of pending development in portal acquisition site?	**High:** Highest range of construction and permanent impacts due to existing, and known pending, level of development **Middle:** Middle range of construction and permanent impacts due to existing, and known pending, level of development **Low:** Lowest range of construction and permanent impacts due to existing, and known pending, level of development	H	M	H
PS/PORT	KEY FACTOR LAND-Time3c	Legal Restrictions on Title	Are there existing legal restrictions to title in the portal acquisition site which would prevent or limit planned construction?	**High:** Title restrictions severely limit available useable land area and is difficult or impossible to remove **Medium:** Some title restrictions exist but can be removed with some effort or project can be adapted to accommodate **Low:** Title restrictions do not limit available useable land	L	L	L
PS/PORT	KEY FACTOR LAND-Time5c	Complexity of Relocations - Conveyance	How difficult and time-consuming will it be for occupants in the portal site areas to relocate?	**High:** Relocations include unique businesses with unique site requirements **Medium:** Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate **Low:** Relative level of complexity in occupant relocations, appears to be low	M	L	M
PS/PORT	SECONDARY FACTOR LAND-Cost8c-r	Residential Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-r	Residential Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-c	Commercial Construction Disruption Temporary	What is the relative magnitude of projected temporary construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	M	M	M
PS/PORT	SECONDARY FACTOR LAND-Cost8d-c	Commercial Construction Disruption Permanent	What is the relative magnitude of projected permanent construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
			FINANCIAL				
PS/PORT	KEY FACTOR LAND-Finan1b	Relative Cost of Site Acquisition and Relocation	What is the estimated total relative cost of private property acquisitions and relocations in the portal site area?	**High:** Highest cost **Medium:** Moderate cost **Low:** Lowest cost	H	M	H

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PORTAL 10

Description								
Component	**Code**	**Topic**	**Questions**	**Scale**	**Site A**	**Site C**	**Site D**	**Site E**
			ENGINEERING					
PS/PORT	KEY FACTOR ENGR-Constr1	Proximity to tunnel centerline	What is the distance from the portal site to the projected centerline of the tunnel ROW?	**Scale:** Quantitative value based on the distance from the projected tunnel centerline to the center of the portal site	250	1180	200	500
PS/PORT	KEY FACTOR ENGR-Geo1	Landslide Potential or Steep Slopes	What is the extent of landslide potential or slopes greater than 30 degrees at the potential portal site?	**Scale:** Based on amount of potential portal area subject to landslide potential or slopes >30 degrees **High:** >30% of the total area has landslide potential or slopes >30 degrees **Medium:** <=30% of the total area has landslide potential or slopes >30 degrees **Low:** None of the area has landslide potential or slopes >30 degrees	Low	Low	Low	Low
PS/PORT	KEY FACTOR ENGR-Acc	Construction and Maintenance Access	What is proximity of a major roadway to potential portal site for construction and maintenance access?	**Scale:** Based upon the relative difficulty of entering and exiting the portal site. **High:** Access through private property or residential neighborhood with small streets. **Medium:** Access from one direction only **Low:** Access from both directions	Medium	Low	Low	Low
PS/PORT	SECONDARY FACTOR ENGR-Constr	Site Ground/Surface Water Pretreatment and Disposal	What is the feasibility of reasonably pre-treating and disposing of ground and surface water related to construction activities at the portal site?	**Scale:** Quantitative value based upon the proximity of the nearest major storm drainage system to the potential portal site.	200	180	200	200
PS/PORT	SECONDARY FACTOR ENGR-Constr2	Feasibility of Making System Portal Connections	If applicable, at this portal site, what is the feasibility of connecting existing pipelines to the tunnel at this site?	**Scale:** Based upon the relative difficulty of making existing piping connections to the tunnel. **High:** Connections Difficult and Complex **Medium:** Connections of Average Difficulty **Low:** Connections Less Complex Than Typical	Medium	High	High	Medium
			COMMUNITY-ENVIRONMENTAL					
PS/PORT	KEY FACTOR ENVR-CR	Archeological and Historic Resources	Are archeological /historic resources likely to be present at portal site?	**Scale:** Archeological/historic resources present at proposed portal site. **High:** Archeological/historical resources likely **Medium**: Archeological/historical resources possible **Low:** Archeological/historical resources unlikely	High	High	High	High
PS/PORT	KEY FACTOR ENVR- Bio1	Endangered Species Act Compliance – Conveyance	Does construction of portals disrupt or cross habitat areas for threatened/endangered/ candidate/state priority species?	**Scale**: Based on a qualitative answer regarding the potential temporary or permanent impacts to habitat areas for threatened / endangered / candidate / state priority species. **High:** Documented presence of special status species or their suitable habitat on the site or directly adjacent and low background activity in the vicinity of the site. **Low:** Documented presence of special status species or their suitable habitat near the site, but high background activity in the vicinity of the site and best management practices would reduce potential for impact. **No:** Lack of documented special status species or suitable habitat on or near the site.	Low	Low	Low	Low
PS/PORT	KEY FACTOR ENVR-Bio 3	High Quality Upland Habitat	Does construction of portals disrupt or cross high quality upland habitat areas?	**Yes:** Construction of the portal is likely to disrupt or cross high quality upland habitat areas. **No:** Construction of the portal would not disrupt or cross high quality upland habitat areas.	No	No	No	No
PS/PORT	KEY FACTOR ENVR-Bio2	Wetlands	Would the portals affect wetlands?	**Scale:** Based on the potential temporary or permanent impact to wetlands or their associated buffers within the specific portal site. **High:** The portal site would permanently impact a Class 1 or 2 wetland **Medium**: The portal construction would temporarily impact a Class 1 or 2 wetland. **Low**: The portal would permanently impact a Class 3 or 4 wetland, or a Class 1 or 2 wetland buffer. **No:** The portal would temporarily impact a buffer or have no impact to wetlands or buffers.	Low	Low	No	Low
PS/PORT	KEY FACTOR ENVR-Hydro	Surface Water Impacts	Would the construction of portals disrupt natural surface waters or their buffers?	**Scale:** Based on the potential of temporary or permanent impacts to surface water and/or their associated buffers at the potential portal site. **High:** It is likely that the construction at the portal site would impact natural surface water **Medium:** It is possible that the construction of the portal would impact natural surface water **Low:** It is unlikely that the construction of the portal would impact natural surface water **No:** The construction of the portal would not impact natural surface water	High	High	Low	Low
PS/PORT	KEY FACTOR ENVR-Acc1	Traffic Disruption- Road & Streets	To what extent will construction of portals disrupt existing transportation facilities?	**High:** Potential to worsen LOS conditions on roadways with existing capacity limitations **Medium:** Construction access on local streets and arterials with no identified capacity problems **Low:** Available roadway network and/or rights-of-way allow minimal disruption of traffic flow.	High	Low	High	Low
PS/PORT	KEY FACTOR ENVR-Acc2	Traffic Disruption-Access	To what extent will portal construction disrupt local traffic access?	**High:** Construction of portals will require long term (construction period) detours or blocked local access **Medium:** Construction of portals will result in short-term (a few days) detours or blocked access **Low:** Construction of portals will not require detours or blocked local access	Medium	Medium	High	
PS/PORT	KEY FACTOR ENVR-Luc	Land Use Compatibility	To what extent will construction of portals disrupt adjacent land uses?	**QUANTITATIVE MEASUREMENT OF NUMBER OF STRUCTURES** **High:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 66th percentile and greater of businesses/residences adjacent to portal site **Medium:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 34th-66th percentile of residences/businesses adjacent to portal site **Low:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 33rd and lower percentile of residences/businesses adjacent to portal site	53	31	36	45
			LAND ACQUISITION & JURISDICTIONAL					
PS/PORT	KEY FACTOR LAND-Time9c	Relative Number of Acquisition Parcels	What is the estimated total number of private property acquisitions in the portal site?	**Scale:** Quantitative value based upon the number of parcels required	4	1	1	5
PS/PORT	KEY FACTOR LAND-Time10c	Relative Level of Upland Property Development	What is the relative magnitude of construction and permanent impacts due to level of upland development and known level of pending development in portal acquisition site?	**High:** Highest range of construction and permanent impacts due to existing, and known pending, level of development **Middle:** Middle range of construction and permanent impacts due to existing, and known pending, level of development **Low:** Lowest range of construction and permanent impacts due to existing, and known pending, level of development	M	L	M	L
PS/PORT	KEY FACTOR LAND-Time3c	Legal Restrictions on Title	Are there existing legal restrictions to title in the portal acquisition site which would prevent or limit planned construction?	**High:** Title restrictions severely limit available useable land area and is difficult or impossible to remove **Medium:** Some title restrictions exist but can be removed with some effort or project can be adapted to accommodate **Low:** Title restrictions do not limit available useable land	L	M	L	L
PS/PORT	KEY FACTOR LAND-Time5c	Complexity of Relocations - Conveyance	How difficult and time-consuming will it be for occupants in the portal site areas to relocate?	**High:** Relocations include unique businesses with unique site requirements **Medium:** Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate **Low:** Relative level of complexity in occupant relocations, appears to be low	M	L	M	M
PS/PORT	SECONDARY FACTOR LAND-Cost8c-r	Residential Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	M	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-r	Residential Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-c	Commercial Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	L	L	M	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-c	Commercial Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	M	L
			FINANCIAL					
PS/PORT	KEY FACTOR LAND-Finan1b	Relative Cost of Site Acquisition and Relocation	What is the estimated total relative cost of private property acquisitions and relocations in the portal site area?	**High:** Highest cost **Medium:** Moderate cost **Low:** Lowest cost	M	L	H	L

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PORTAL 7

Description							
Component	**Code**	**Topic**	**Questions**	**Scale**	**Site A**	**Site B**	**Site C**
			ENGINEERING				
PS/PORT	KEY FACTOR ENGR-Constr1	Proximity to tunnel centerline	What is the distance from the portal site to the projected centerline of the tunnel ROW?	**Scale:** Quantitative value based on the distance from the projected tunnel centerline to the center of the portal site	500	350	350
PS/PORT	KEY FACTOR ENGR-Geo1	Landslide Potential or Steep Slopes	What is the extent of landslide potential or slopes greater than 30 degrees at the potential portal site?	**Scale:** Based on amount of potential portal area subject to landslide potential or slopes >30 degrees **High:** >30% of the total area has landslide potential or slopes >30 degrees **Medium:** <=30% of the total area has landslide potential or slopes >30 degrees **Low:** None of the area has landslide potential or slopes >30 degrees	Low	Low	Low
PS/PORT	KEY FACTOR ENGR-Acc	Construction and Maintenance Access	What is proximity of a major roadway to potential portal site for construction and maintenance access?	**Scale:** Based upon the relative difficulty of entering and exiting the portal site. **High:** Access through private property or residential neighborhood with small streets. **Medium:** Access from one direction only **Low:** Access from both directions	Low	Low	Low
PS/PORT	SECONDARY FACTOR ENGR-Constr	Site Ground/Surface Water Pretreatment and Disposal	What is the feasibility of reasonably pre-treating and disposing of ground and surface water related to construction activities at the portal site?	**Scale:** Quantitative value based upon the proximity of the nearest major storm drainage system to the potential portal site.	400	250	250
PS/PORT	SECONDARY FACTOR ENGR-Constr2	Feasibility of Making System Portal Connections	If applicable, at this portal site, what is the feasibility of connecting existing pipelines to the tunnel at this site?	**Scale:** Based upon the relative difficulty of making existing piping connections to the tunnel. **High:** Connections Difficult and Complex **Medium:** Connections of Average Difficulty **Low:** Connections Less Complex Than Typical	NA	NA	NA
			COMMUNITY-ENVIRONMENTAL				
PS/PORT	KEY FACTOR ENVR-CR	Archeological and Historic Resources	Are archeological /historic resources likely to be present at portal site?	**Scale:** Archeological/historic resources present at proposed portal site. **High:** Archeological/historical resources likely **Medium**: Archeological/historical resources possible **Low:** Archeological/historical resources unlikely	High	High	Medium
PS/PORT	KEY FACTOR ENVR- Bio1	Endangered Species Act Compliance – Conveyance	Does construction of portals disrupt or cross habitat areas for threatened/endangered/ candidate/state priority species?	**Scale**: Based on a qualitative answer regarding the potential temporary or permanent impacts to habitat areas for threatened / endangered / candidate / state priority species. **High:** Documented presence of special status species or their suitable habitat on the site or directly adjacent and low background activity in the vicinity of the site. **Low:** Documented presence of special status species or their suitable habitat near the site, but high background activity in the vicinity of the site and best management practices would reduce potential for impact. **No:** Lack of documented special status species or suitable habitat on or near the site.	No	No	Low
PS/PORT	KEY FACTOR ENVR-Bio 3	High Quality Upland Habitat	Does construction of portals disrupt or cross high quality upland habitat areas?	**Yes:** Construction of the portal is likely to disrupt or cross high quality upland habitat areas. **No:** Construction of the portal would not disrupt or cross high quality upland habitat areas.	No	No	No
PS/PORT	KEY FACTOR ENVR-Bio2	Wetlands	Would the portals affect wetlands?	**Scale:** Based on the potential temporary or permanent impact to wetlands or their associated buffers within the specific portal site. **High:** The portal site would permanently impact a Class 1 or 2 wetland **Medium**: The portal construction would temporarily impact a Class 1 or 2 wetland. **Low**: The portal would permanently impact a Class 3 or 4 wetland, or a Class 1 or 2 wetland buffer. **No:** The portal would temporarily impact a buffer or have no impact to wetlands or buffers.	No	No	Medium
PS/PORT	KEY FACTOR ENVR-Hydro	Surface Water Impacts	Would the construction of portals disrupt natural surface waters or their buffers?	**Scale:** Based on the potential of temporary or permanent impacts to surface water and/or their associated buffers at the potential portal site. **High:** It is likely that the construction at the portal site would impact natural surface water **Medium:** It is possible that the construction of the portal would impact natural surface water **Low:** It is unlikely that the construction of the portal would impact natural surface water **No:** The construction of the portal would not impact natural surface water	Low	Medium	High
PS/PORT	KEY FACTOR ENVR-Acc1	Traffic Disruption- Road & Streets	To what extent will construction of portals disrupt existing transportation facilities?	**High:** Potential to worsen LOS conditions on roadways with existing capacity limitations **Medium:** Construction access on local streets and arterials with no identified capacity problems **Low:** Available roadway network and/or rights-of-way allow minimal disruption of traffic flow.	High	High	High
PS/PORT	KEY FACTOR ENVR-Acc2	Traffic Disruption-Access	To what extent will portal construction disrupt local traffic access?	**High:** Construction of portals will require long term (construction period) detours or blocked local access **Medium:** Construction of portals will result in short-term (a few days) detours or blocked access **Low:** Construction of portals will not require detours or blocked local access	Low	Low	
PS/PORT	KEY FACTOR ENVR-Luc	Land Use Compatibility	To what extent will construction of portals disrupt adjacent land uses?	**QUANTITATIVE MEASUREMENT OF NUMBER OF STRUCTURES** **High:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 66th percentile and greater of businesses/residences adjacent to portal site **Medium:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 34th-66th percentile of residences/businesses adjacent to portal site **Low:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 33rd and lower percentile of residences/businesses adjacent to portal site	282	320	411
			LAND ACQUISITION & JURISDICTIONAL				
PS/PORT	KEY FACTOR LAND-Time9c	Relative Number of Acquisition Parcels	What is the estimated total number of private property acquisitions in the portal site?	**Scale:** Quantitative value based upon the number of parcels required	1	1	1 (1 Easement)
PS/PORT	KEY FACTOR LAND-Time10c	Relative Level of Upland Property Development	What is the relative magnitude of construction and permanent impacts due to level of upland development and known level of pending development in portal acquisition site?	**High:** Highest range of construction and permanent impacts due to existing, and known pending, level of development **Middle:** Middle range of construction and permanent impacts due to existing, and known pending, level of development **Low:** Lowest range of construction and permanent impacts due to existing, and known pending, level of development	M	M	L
PS/PORT	KEY FACTOR LAND-Time3c	Legal Restrictions on Title	Are there existing legal restrictions to title in the portal acquisition site which would prevent or limit planned construction?	**High:** Title restrictions severely limit available useable land area and is difficult or impossible to remove **Medium:** Some title restrictions exist but can be removed with some effort or project can be adapted to accommodate **Low:** Title restrictions do not limit available useable land	M	L	M
PS/PORT	KEY FACTOR LAND-Time5c	Complexity of Relocations - Conveyance	How difficult and time-consuming will it be for occupants in the portal site areas to relocate?	**High:** Relocations include unique businesses with unique site requirements **Medium:** Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate **Low:** Relative level of complexity in occupant relocations, appears to be low	M	M	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-r	Residential Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-r	Residential Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-c	Commercial Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-c	Commercial Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
			FINANCIAL				
PS/PORT	KEY FACTOR LAND-Finan1b	Relative Cost of Site Acquisition and Relocation	What is the estimated total relative cost of private property acquisitions and relocations in the portal site area?	**High:** Highest cost **Medium:** Moderate cost **Low:** Lowest cost	L	M	L

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PORTAL 3

Description							
Component	**Code**	**Topic**	**Questions**	**Scale**	**Site D**	**Site E**	**Site F**
			ENGINEERING				
PS/PORT	KEY FACTOR ENGR-Constr1	Proximity to tunnel centerline	What is the distance from the portal site to the projected centerline of the tunnel ROW?	**Scale:** Quantitative value based on the distance from the projected tunnel centerline to the center of the portal site	0	250	500
PS/PORT	KEY FACTOR ENGR-Geo1	Landslide Potential or Steep Slopes	What is the extent of landslide potential or slopes greater than 30 degrees at the potential portal site?	**Scale:** Based on amount of potential portal area subject to landslide potential or slopes >30 degrees **High:** >30% of the total area has landslide potential or slopes >30 degrees **Medium:** <=30% of the total area has landslide potential or slopes >30 degrees **Low:** None of the area has landslide potential or slopes >30 degrees	Low	Low	2
PS/PORT	KEY FACTOR ENGR-Acc	Construction and Maintenance Access	What is proximity of a major roadway to potential portal site for construction and maintenance access?	**Scale:** Based upon the relative difficulty of entering and exiting the portal site. **High:** Access through private property or residential neighborhood with small streets. **Medium:** Access from one direction only **Low:** Access from both directions	Medium	Medium	Low
PS/PORT	SECONDARY FACTOR ENGR-Constr	Site Ground/Surface Water Pretreatment and Disposal	What is the feasibility of reasonably pre-treating and disposing of ground and surface water related to construction activities at the portal site?	**Scale:** Quantitative value based upon the proximity of the nearest major storm drainage system to the potential portal site.	180	180	180
PS/PORT	SECONDARY FACTOR ENGR-Constr2	Feasibility of Making System Portal Connections	If applicable, at this portal site, what is the feasibility of connecting existing pipelines to the tunnel at this site?	**Scale:** Based upon the relative difficulty of making existing piping connections to the tunnel. **High:** Connections Difficult and Complex **Medium:** Connections of Average Difficulty **Low:** Connections Less Complex Than Typical	NA	NA	NA
			COMMUNITY-ENVIRONMENTAL				
PS/PORT	KEY FACTOR ENVR-CR	Archeological and Historic Resources	Are archeological /historic resources likely to be present at portal site?	**Scale:** Archeological/historic resources present at proposed portal site. **High:** Archeological/historical resources likely **Medium**: Archeological/historical resources possible **Low:** Archeological/historical resources unlikely	Low	Low	Low
PS/PORT	KEY FACTOR ENVR- Bio1	Endangered Species Act Compliance – Conveyance	Does construction of portals disrupt or cross habitat areas for threatened/endangered/ candidate/state priority species?	**Scale**: Based on a qualitative answer regarding the potential temporary or permanent impacts to habitat areas for threatened / endangered / candidate / state priority species. **High:** Documented presence of special status species or their suitable habitat on the site or directly adjacent and low background activity in the vicinity of the site. **Low:** Documented presence of special status species or their suitable habitat near the site, but high background activity in the vicinity of the site and best management practices would reduce potential for impact. **No:** Lack of documented special status species or suitable habitat on or near the site.	No	No	No
PS/PORT	KEY FACTOR ENVR-Bio 3	High Quality Upland Habitat	Does construction of portals disrupt or cross high quality upland habitat areas?	**Yes:** Construction of the portal is likely to disrupt or cross high quality upland habitat areas. **No:** Construction of the portal would not disrupt or cross high quality upland habitat areas.	No	No	No
PS/PORT	KEY FACTOR ENVR-Bio2	Wetlands	Would the portals affect wetlands?	**Scale:** Based on the potential temporary or permanent impact to wetlands or their associated buffers within the specific portal site. **High:** The portal site would permanently impact a Class 1 or 2 wetland **Medium**: The portal construction would temporarily impact a Class 1 or 2 wetland. **Low**: The portal would permanently impact a Class 3 or 4 wetland, or a Class 1 or 2 wetland buffer. **No:** The portal would temporarily impact a buffer or have no impact to wetlands or buffers.	No	No	Low
PS/PORT	KEY FACTOR ENVR-Hydro	Surface Water Impacts	Would the construction of portals disrupt natural surface waters or their buffers?	**Scale:** Based on the potential of temporary or permanent impacts to surface water and/or their associated buffers at the potential portal site. **High:** It is likely that the construction at the portal site would impact natural surface water **Medium:** It is possible that the construction of the portal would impact natural surface water **Low:** It is unlikely that the construction of the portal would impact natural surface water **No:** The construction of the portal would not impact natural surface water	No	No	No
PS/PORT	KEY FACTOR ENVR-Acc1	Traffic Disruption- Road & Streets	To what extent will construction of portals disrupt existing transportation facilities?	**High:** Potential to worsen LOS conditions on roadways with existing capacity limitations **Medium:** Construction access on local streets and arterials with no identified capacity problems **Low:** Available roadway network and/or rights-of-way allow minimal disruption of traffic flow.	Medium	Medium	Medium
PS/PORT	KEY FACTOR ENVR-Acc2	Traffic Disruption-Access	To what extent will portal construction disrupt local traffic access?	**High:** Construction of portals will require long term (construction period) detours or blocked local access **Medium:** Construction of portals will result in short-term (a few days) detours or blocked access **Low:** Construction of portals will not require detours or blocked local access	Medium	Medium	
PS/PORT	KEY FACTOR ENVR-Luc	Land Use Compatibility	To what extent will construction of portals disrupt adjacent land uses?	**QUANTITATIVE MEASUREMENT OF NUMBER OF STRUCTURES** **High:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 66th percentile and greater of businesses/residences adjacent to portal site **Medium:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 34th-66th percentile of residences/businesses adjacent to portal site **Low:** Based upon inventory of residences/businesses within 400 feet of proposed portal site boundary, 33rd and lower percentile of residences/businesses adjacent to portal site	104	112	67
			LAND ACQUISITION & JURISDICTIONAL				
PS/PORT	KEY FACTOR LAND-Time9c	Relative Number of Acquisition Parcels	What is the estimated total number of private property acquisitions in the portal site?	**Scale:** Quantitative value based upon the number of parcels required	6	4	1 (1 Easement)
PS/PORT	KEY FACTOR LAND-Time10c	Relative Level of Upland Property Development	What is the relative magnitude of construction and permanent impacts due to level of upland development and known level of pending development in portal acquisition site?	**High:** Highest range of construction and permanent impacts due to existing, and known pending, level of development **Middle:** Middle range of construction and permanent impacts due to existing, and known pending, level of development **Low:** Lowest range of construction and permanent impacts due to existing, and known pending, level of development	M	M	L
PS/PORT	KEY FACTOR LAND-Time3c	Legal Restrictions on Title	Are there existing legal restrictions to title in the portal acquisition site which would prevent or limit planned construction?	**High:** Title restrictions severely limit available useable land area and is difficult or impossible to remove **Medium:** Some title restrictions exist but can be removed with some effort or project can be adapted to accommodate **Low:** Title restrictions do not limit available useable land	L	L	L
PS/PORT	KEY FACTOR LAND-Time5c	Complexity of Relocations - Conveyance	How difficult and time-consuming will it be for occupants in the portal site areas to relocate?	**High:** Relocations include unique businesses with unique site requirements **Medium:** Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate **Low:** Relative level of complexity in occupant relocations, appears to be low	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-r	Residential Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	M	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-r	Residential Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on residential property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8c-c	Commercial Construction Disruption - Temporary	What is the relative magnitude of projected temporary construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of temporary residential disruption in candidate site **Medium:** Appear to have mid-level impacts of temporary residential disruption in candidate site **Low:** Appear to have the lowest levels of temporary residential disruption in candidate site	L	L	L
PS/PORT	SECONDARY FACTOR LAND-Cost8d-c	Commercial Construction Disruption - Permanent	What is the relative magnitude of projected permanent construction disruption on commercial property uses adjacent to portal site areas?	**High:** Appear to have the highest levels of permanent residential disruption in candidate site **Medium:** Appear to have mid-level impacts of permanent residential disruption in candidate site **Low:** Appear to have the lowest levels of permanent residential disruption in candidate site	L	L	L
			FINANCIAL				
PS/PORT	KEY FACTOR LAND-Finan1b	Relative Cost of Site Acquisition and Relocation	What is the estimated total relative cost of private property acquisitions and relocations in the portal site area?	**High:** Highest cost **Medium:** Moderate cost **Low:** Lowest cost	M	M	L

Attachment F

Evaluation Results of the Candidate Sites
for each Portal Area

Route 9 – 195th Effluent Conveyance - Portal E5

Portal Location: Intersection of Ballinger Way NE and NE 205th Street
Corridor Segments: Deep Tunnel Access Portal for Segment I7-I5-I3

PORTAL AREA FEATURES

Engineering	
Portal Diameter	30 feet
Purpose	TBM Launch/Receive
Portal Depth	180 feet
Candidate Site Size	1.0 - 1.8 acres
Portal Excavated Volume	6,000 CY
Tunnel Spoils Volume From Portal	0 CY (Receiving Portal)
Depth to Groundwater	30 feet
Dewatering Flow Rate	1-10 gpm
Nearest Power Substation	Mountlake, Ballinger
King County Trunk Connection	No
Local System Connection	No
Environmental / Community	
Archaeological Site Probability	High
Range of Number of Parcels Req.	1 to 2
Range of Number of Owners Req.	1
Drinking Water Wells	No
Length of Activity at Portal	1.0 Year
Site Contamination / Geologic Hazard Potential	No expected hazard
Acres of Wetlands	2.05
Linear Feet of Streams	2,095
Jurisdiction(s)	Mountlake Terrace, Shoreline

EVALUATION OF PORTAL SITES

OVERALL EVALUATION

All the candidate sites are suitable for portal construction. None of the sites pose any significant engineering constraint to portal construction. Sites I5-B and I5-X have the highest density of surrounding land uses, which are mostly residential.

ENGINEERING

All the candidate sites have suitable geotechnical features for portal construction and pose no known geologic hazard. Construction and maintenance access to all of these sites is from both directions. Site I5-X has the shortest conveyance length while Sites I5-B and I5-G have a moderate conveyance length.

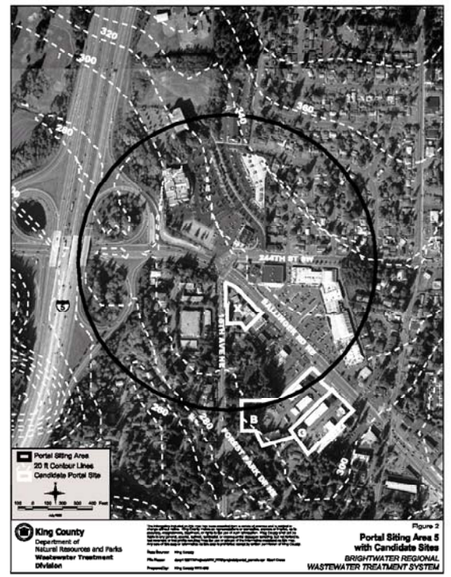
ENVIRONMENTAL / COMMUNITY

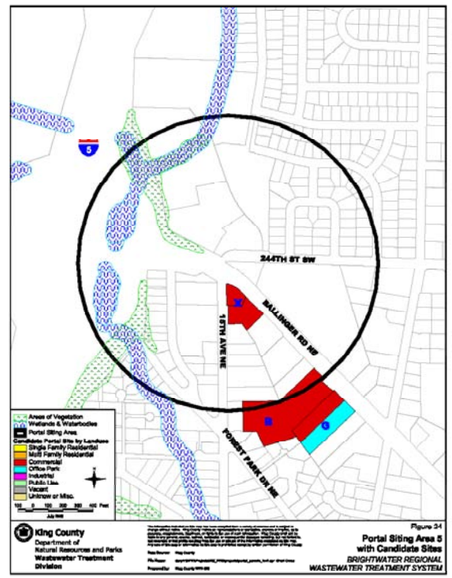
Sites I5-B is located in the City of Shoreline. The highly developed portal siting area is largely a mix of single- and multi-family residential, commercial, and retail land uses. Sites I5-B and I5-G have the highest density of surrounding land uses, which are mostly residential. Site E5-X consists of a bank and a gas station. All of the sites are completely developed and none of them are adjacent to streams, wetlands, buffers, or mature forest.

LAND ACQUISITION

Scarcity of vacant parcels without sensitive areas has led to consideration of other uses in this densely developed area.

PORTAL AREA AND SITES





PORTAL SITES COMPARISON

Features	Site E5-B	Site E5-G	Site E5-X
Number of Parcels - Number of Owners	1-1	2-1	2-1
Existing Land Use	Commercial	Commercial	Commercial
Adjacent Land Use (Approx. number of buildings and dwelling units w/in 400 feet)	71	35	23
Complexity of Relocation	Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate (M)	Relative level of complexity in occupant relocation appears to be low (L)	Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate (M)
Wetland classification, characteristics, and potential impacts	Construction would not impact a wetland or wetland buffer.	Construction would not impact a wetland or wetland buffer.	Construction would not impact a wetland or wetland buffer.
Forested characteristics and potential impacts	An immature Douglas fir and Himalayan blackberry forest area is present on the west portion of the site.	No impact to forest habitat.	No impact to forest habitat.
Stream/buffer characteristics and potential impacts	Construction would not impact a stream or stream buffer.	Construction would not impact a stream or stream buffer.	Construction would not impact a stream or stream buffer.
Presence/habitat for special status species	There is no documented presence or habitat for special status species.	There is no documented presence or habitat for special status species.	There is no documented presence or habitat for special status species.
Construction/Maintenance Access	Access from both directions. (L)	Access from both directions. (L)	Access from both directions. (L)
Distance to Tunnel Centerline	350	250	100

Unocal Influent Conveyance - Portal I7

Portal Location: Vicinity of Ballinger Way (SR-104) NE and 25th Ave NE in the city of Lake Forest Park
Corridor Segments: Tunnel Access Portal for Segment I10-I7-I5

PORTAL AREA FEATURES

Engineering	
Portal Diameter	50 feet
Purpose	TBM Launch/Receive
Minimum Depth	120 feet
Candidate Site Size	2.9-9.0 acres
Portal Excavated Volume	11,000 CY
Tunnel Spoils Volume From Portal	148,000 CY
Depth to Groundwater	2 feet
Dewatering Flow Rate	1 – 250 gpm(Force Main)
Distance to Power	X feet
King County Trunk Connection	No
Local System Connection	No
Environmental / Community	
Archaeological Site Probability	High – medium
Range of Number of Parcels Req.	1
Range of Number of Owners Req.	1
Drinking Water Wells	No
Length of Activity at Portal	3.0 Years
Site Contamination Potential	No potential for contamination identified. Partial erosion and landslide hazard potential.
Area of Wetlands in Area	approx. 4.24
Length of Surface Streams in Area	approx. 1,415
Jurisdiction(s)	Shoreline

EVALUATION OF PORTAL SITES

OVERALL EVALUATION

All the candidate sites are suitable for portal construction. The three sites are comparable in terms of meeting engineering requirements. Both Sites I7-A and I7-B are heavily developed and ecologically degraded. Construction at Site I7-B has the possibility to affect the adjacent West Fork of Lyon Creek. Site I7-C is Breugger's Bog Park (City of Shoreline) which contains scrub/shrub wetland, the West Fork of Lyon Creek, a patch of mixed coniferous and deciduous forest, and mown grass.

ENGINEERING

All the sites have land suitable for construction without any major slope stability issues. The sites have comparable conveyance length and have construction and maintenance access from both directions.

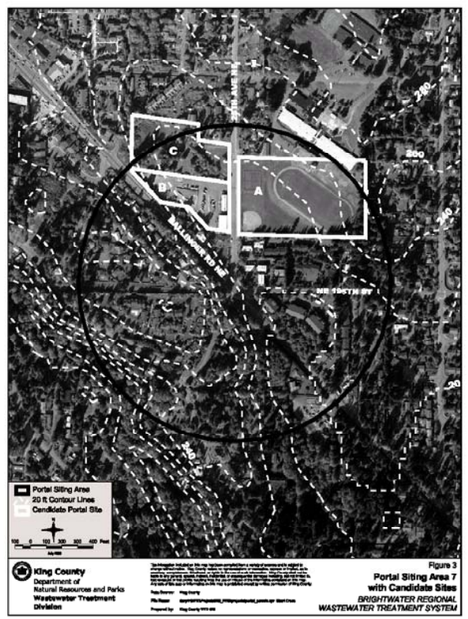
ENVIRONMENTAL / COMMUNITY

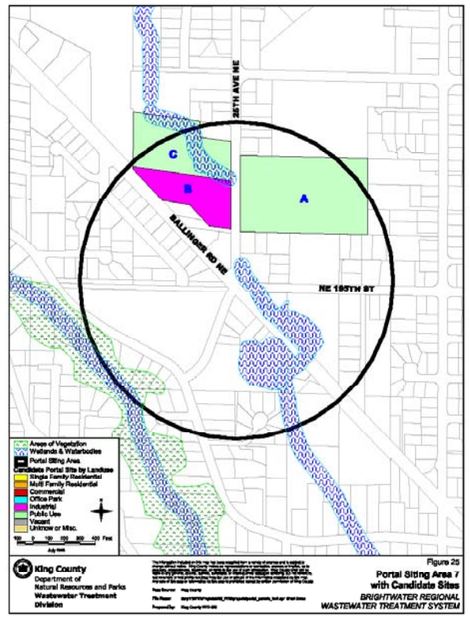
Sites I7-A and I7-B are heavily developed and ecologically degraded sites. Site I7-A is a large mown grass ball field associated with the Aldercrest Learning Center. Site I7-B is a paved King County Department of Transportation facility. Site I7-C is Brugger's Bog Park (City of Shoreline) which contains scrub/shrub wetland, the West Fork of Lyon Creek, a patch of mixed coniferous and deciduous forest, and mown grass.

LAND ACQUISITION

Scarcity of vacant property w/o sensitive areas has led to consideration of other uses including a park and ball field areas where small size requirement after construction results in temporary disruption.

PORTAL AREA AND SITES





PORTAL SITES COMPARISON

Features	Site I7-A	Site I7-B	Site I7-C
Number of Parcels - Number of Owners	1-1	1-1	1-1
Existing Land Use	Public School	Public Utility	Park – Public (Brugger's Bog)
Adjacent Land Use (Approx. number of buildings and dwelling units w/in 400 feet)	282	320	411
Complexity of Relocation	Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate (M)	Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate (M)	Relative level of complexity in occupant relocations appear to be low (L)
Wetland classification, characteristics, and potential impacts	Construction would not impact a wetland and/or wetland buffer.	No potential impact (existing wetland buffer on the site is unvegetated and degraded).	Likely impact to a Category 2 wetland (Brugger's Bog). Existing buffer is degraded (e.g., mowed)
Forested characteristics and potential impacts	None	None	Small patch of mixed coniferous and deciduous forest composed of mature and young trees.
Stream/buffer characteristics and potential impacts	Construction would not impact a stream or stream buffer.	It is possible that construction would impact the West Fork of Lyon Creek located adjacent to site.	Likely impact to the West Fork of Lyon Creek.
Presence/habitat for special status species	There is no documented presence or potential habitat for special status species.	No potential habitat for special status species on the site. Potential presence/habitat for special status species on adjacent site (see Site E7-C).	Potential presence/habitat for coho salmon, Great Blue heron, and amphibians within Brugger's Bog/West Fork of Lyon Creek.
Construction/Maintenance Access	Access from both directions (L)	Access from both directions (L)	Access from both directions (L)
Distance to Tunnel Centerline	500	350	350

ROUTE 9 Effluent Conveyance - Portal E7 (195th St Alternative)

Portal Location: Vicinity of Ballinger Way (SR-104) NE and 25th Ave NE in the city of Lake Forest Park
Corridor Segments: Tunnel Access Portal for Segment E45-E7- E27

PORTAL AREA FEATURES

Engineering	
Portal Diameter	50 feet
Purpose	TBM Launch/Receive
Minimum Depth	50 feet
Maximum Depth	265 feet
Candidate Site Size	2.9-9.0 acres
Portal Excavated Volume	5,000 – 24,000 CY
Tunnel Spoils Volume From Portal	55,000 CY
Depth to Groundwater	2 feet
Dewatering Flow Rate	High
Nearest Power Substation	Mountlake, Shoreline
King County Trunk Connection	No
Local System Connection	No
Environmental / Community	
Archaeological Site Probability	High – medium
Range of Number of Parcels Req.	1
Range of Number of Owners Req.	1
Drinking Water Wells	No
Length of Activity at Portal	2-4 Years
Site Contamination / Geologic Hazard Potential	No potential for contamination identified. Partial erosion and landslide hazard potential
Area of Wetlands in Area (acres)	approx. 4.24
Length of Surface Streams in Area (feet)	approx. 1,415
Jurisdiction(s)	Shoreline

EVALUATION OF PORTAL SITES

OVERALL EVALUATION

All the candidate sites are suitable for portal construction. The three sites are comparable in terms of meeting engineering requirements. Sites E7-A and E7-B are heavily developed and ecologically degraded. Construction at Site E7-B could affect the adjacent West Fork of Lyon Creek. Site E7-C is Breugger's Bog Park (City of Shoreline) which contains scrub/shrub wetland, the West Fork of Lyon Creek, a patch of mixed coniferous and deciduous forest, and mown grass.

ENGINEERING

All the candidate sites have land suitable for construction without major slope stability issues. All sites have comparable conveyance length and have construction and maintenance access from both directions.

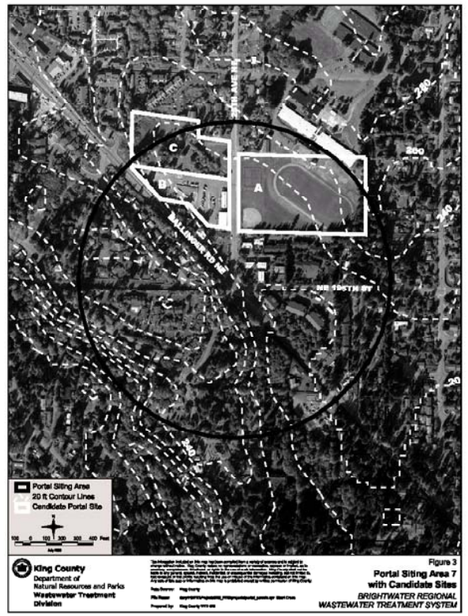
ENVIRONMENTAL / COMMUNITY

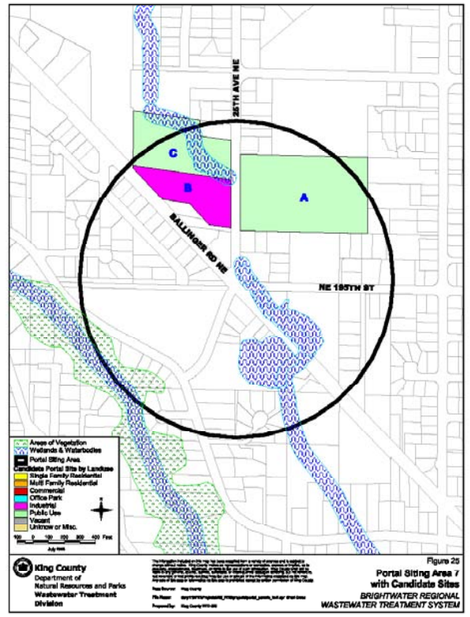
Sites E7-A and E7-B are heavily developed and ecologically degraded. Site E7-A is a large mown grass ball field associated with the Aldercrest Learning Center. Site E7-B is a paved King County Department of Transportation facility. Site E7-C is Brugger's Bog Park (City of Shoreline), which contains scrub/shrub wetland, the West Fork of Lyon Creek, a patch of mixed coniferous and deciduous forest, and mown grass.

LAND ACQUISITION

Scarcity of vacant property w/o sensitive areas has led to the consideration of park and ball field areas where small size requirement after construction results in temporary disruption.

PORTAL AREA AND SITES





PORTAL SITES COMPARISON

Features	Site E7-A	Site E7-B	Site E7-C
Number of Parcels - Number of Owners	1-1	1-1	1-1
Existing Land Use	Public School	Public Utility	Park – Public (Brugger's Bog)
Adjacent Land Use (Approx. number of buildings and dwelling units w/in 400 feet)	282	320	411
Complexity of Relocation	Relative level of complexity in occupant relocations appear to be low (L)	Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate (M)	Relative level of complexity in occupant relocations appear to be low (L)
Wetland classification, characteristics, and potential impacts	Construction would not impact a wetland and/or wetland buffer.	No potential impact (existing wetland buffer on the site is unvegetated and degraded).	Likely impact to a Category 2 wetland (Brugger's Bog). Existing buffer is degraded (e.g., mowed)
Forested characteristics and potential impacts	None	None	Small patch of mixed coniferous and deciduous forest composed of mature and young trees.
Stream/buffer characteristics and potential impacts	Construction would not impact a stream or stream buffer.	It is possible that construction would impact the West Fork of Lyon Creek located adjacent to site.	Likely impact to the West Fork of Lyon Creek.
Presence/habitat for special status species	There is no documented presence or potential habitat for special status species.	No potential habitat for special status species on the site. Potential presence/habitat for special status species on adjacent site (see Site E7-C).	Potential presence/habitat for coho salmon, Great Blue heron, and amphibians within Brugger's Bog/West Fork of Lyon Creek.
Construction/Maintenance Access	Access from both directions (L)	Access from both directions (L)	Access from both directions (L)
Distance to Tunnel Centerline	500	350	350

Unocal Influent Conveyance - Portal I10

Portal Location: Vicinity of NE 178th and 44th Ave NE near Bothell Way and Ballinger Way
Corridor Segments: Tunnel Access Portal for Segment I10-I11

PORTAL AREA FEATURES

Engineering	
Portal Diameter	50 feet
Purpose	TBM Launch/Receive
Minimum Depth	40 feet
Maximum Depth	60 feet
Candidate Site Size	1.7-5.6 acres
Portal Excavated Volume	3,700 – 5,000 CY
Tunnel Spoils Volume From Portal	47,000 CY
Depth to Groundwater	2 feet
Dewatering Flow Rate	Low
Distance to Power	
King County Trunk Connection	Yes – McAleer/Lyon
Local System Connection	No
Environmental / Community	
Archaeological Site Probability	High
Range of Number of Parcels Req.	1 to 4
Range of Number of Owners Req.	1 to 3
Drinking Water Wells	No
Length of Activity at Portal	2-4 year
Site Contamination/ Geologic Hazard Potential	No potential for contamination identified. Small areas of erosion hazard.
Area of Wetlands in Area	approx. 0.37
Length of Surface Streams in Area	approx. 2,077
Jurisdiction(s)	Lake Forest Park

EVALUATION OF PORTAL SITES

OVERALL EVALUATION

All the candidate sites are suitable for portal construction. No significant geotechnical constraints were identified. Lyon Creek flows through Site I10-A. This site contains many large mature trees and mown grass. Site I10-C is located at Animal Acres Park, and McAleer Creek runs through the southwestern half of the park. SiteI10-E is located on residential properties while Site I10-D is located within the northern portion of the Lake Forest shopping center.

ENGINEERING

Geotechnical features of all three sites are favorable to construction as they are on flat land posing no landslide potential. All of the sites except I10-A have access for construction and maintenance from both directions. Sites I10-A and I10-D have advantage of having shorter conveyance length.

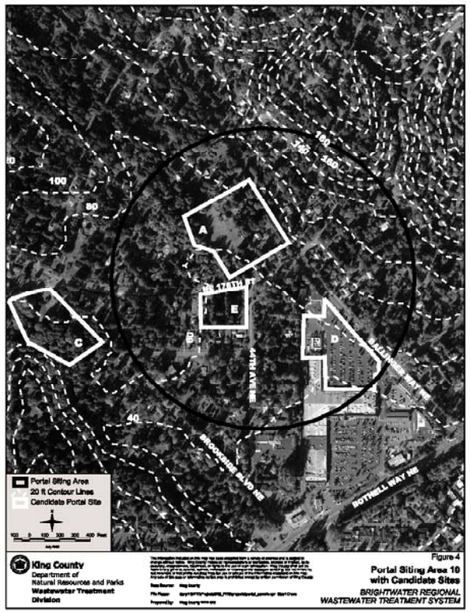
ENVIRONMENTAL / COMMUNITY

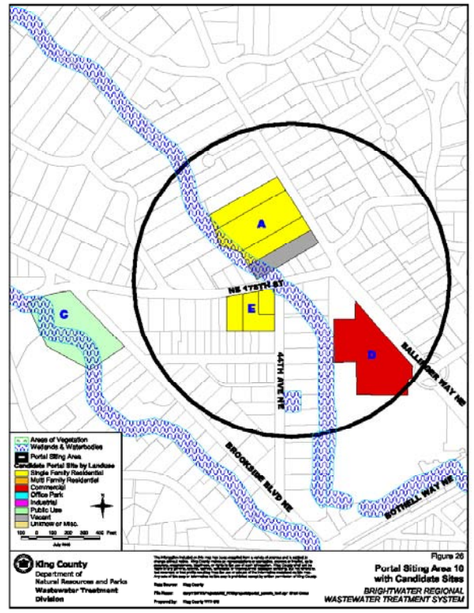
This portal siting area is located near the Lake Forest shopping center. Site I10-A consists of a group of residential properties, which Lyon Creek flows through. Many large mature trees and mown grass characterize this site. Site I10-C is located at Animal Acres Park. McAleer Creek runs through the southwestern half of the park. The buffer is forested and contains a shrub understory. Site I10-D is located within the northern portion of the Lake Forest shopping center. The entire site is paved or built. SiteI10-E is located on residential properties. The properties are well vegetated with a mix of trees, shrubs, and lawns. Swale-shaped lawn along the eastern margin of the properties is potentially wetland.

LAND ACQUISITION

Scarcity of vacant property without sensitive area exclusions has led to inclusion of Site I10-C outside the circle and consideration of commercial and residential properties.

PORTAL AREA AND SITES





PORTAL SITES COMPARISON

Features	Site I10-A	Site I10-C	Site I10-D	Site I10-E
Number of Parcels - Number of Owners	3-2	1-1	1-1	3-3
Existing Land Use	Single Family (Res. Use/zone) Vacant (single family)	Vacant (single family)	Shopping Center (community)	Single Family (Res. Use/zone) Utility - public
Adjacent Land Use (Approx. number of buildings and dwelling units w/in 400 feet)	53	31	36	45
Complexity of Relocation	Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate (M)	Relative level of complexity in occupant relocations appear to be low (L)	Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate (M)	Relative level of complexity in occupant relocations appear to be low (L)
Wetland classification, characteristics, and potential impacts	Likely impact to a potential Category 3 wetland and associated buffer on grassy portion of site.	Likely impact to Category 3 wetlands associated with McAleer Creek and forested buffers.	No impact to wetlands or buffers.	Likely impact to a potential emergent Category 4 wetland.
Forested characteristics and potential impacts	Likely impact to occasional mature conifers on northeastern portion of site.	Likely impact to occasional mature conifers on site.	No impact to forested habitat.	No impact to forested habitat.
Stream/buffer characteristics and potential impacts	Likely impact to Lyon Creek. Minimal impact to buffer (buffer is mowed with occasional trees).	Likely impact to McAleer Creek, associated wetlands, and forested buffer.	It is unlikely that construction would impact Lyon Creek or its buffer (already paved)	Construction would not impact a stream or stream buffer.
Presence/habitat for special status species	Potential presence/habitat for coho salmon within Lyon Creek.	Potential presence/habitat for coho and chinook salmon within McAleer Creek.	There is no documented presence or potential habitat for special status species on site. Coho salmon are present in Lyon Creek, which is located adjacent to the site.	There is no documented presence or potential habitat for special status species on site or directly adjacent.
Construction/Maintenance Access	Access from one direction only (M)	Access from both directions (L)	Access from both directions (L)	Access from both directions (L)
Distance to Tunnel Centerline	250	1180	200	500

Unocal Influent Conveyance - Portal I11

Portal Location: Vicinity of NE 175th and 68th Ave NE near Bothell Way and Juanita DR NE
Corridor Segments: Tunnel Access Portal for Segment I12-I11-I10

PORTAL AREA FEATURES

Engineering	
Portal Diameter	50 feet (Or square excavation 40 feet by 100 feet)
Purpose	TBM Launch/Receive
Portal Depth	60 feet
Candidate Site Size	2.3-4.3 acres
Portal Excavated Volume	6,000 CY
Tunnel Spoils Volume From Portal	125,000 CY
Depth to Groundwater	2 feet
Dewatering Flow Rate	0 – 250 gpm
Nearest Power Substation	Kenmore
King County Trunk Connection	Yes – Kenmore & Swamp Creek
Local System Connection	No
Environmental / Community	
Archaeological Site Probability	High
Range of Number of Parcels Req.	1 to 3
Range of Number of Owners Req.	1 to 3
Drinking Water Wells	No
Length of Activity at Portal	3.5 Years
Site Contamination / Geologic Hazard Potential	No potential for contamination identified
Area of Wetlands in Area	0
Length of Surface Streams in Area	0
Jurisdiction(s)	Kenmore

EVALUATION OF PORTAL SITES

OVERALL EVALUATION

The candidate sites are suitable for portal construction. Overall all three sites meet engineering requirements. Site I11-A has the advantage of the shortest conveyance length. This portal siting area is located at the commercial core of Kenmore. Most of the area is heavily developed commercial and industrial properties with minimal vegetative cover.

ENGINEERING

Geotechnical features of all three sites are mostly favorable to construction as they are on flat land posing no major landslide potential. Both Sites I11-A & I11-B provide adequate access for maintenance and construction from both directions, while Site I11-C provides access from one direction only. Site I11-A has the advantage of having the minimal conveyance length. King County trunk connection is required at Kenmore & Swamp Creek connections from site.

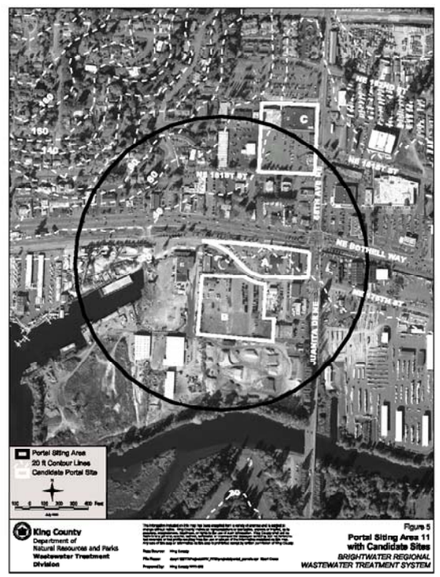
ENVIRONMENTAL / COMMUNITY

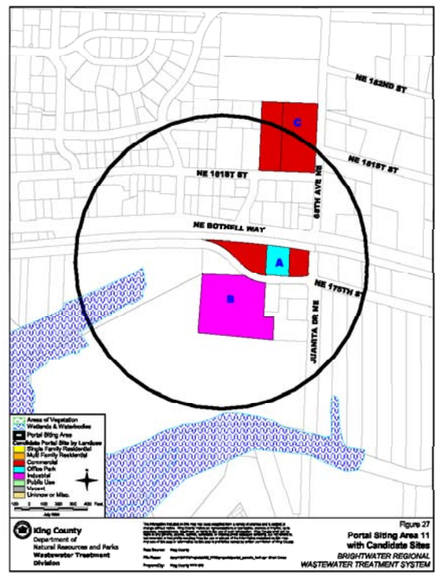
This portal siting area is located at the commercial core of Kenmore. Most of the area is heavily developed commercial and industrial properties with minimal vegetative cover. Site I11-A contains two commercial buildings and parking lots. Site I11-B is an automobile storage area. Site I11-C is part of a retail center. The proposed sites are similar in their lack of habitat.

LAND ACQUISITION

Scarcity of vacant parcels with this heavily developed area has led to consideration of open areas and large parcels devoted to other uses.

PORTAL AREA AND SITES





PORTAL SITES COMPARISON

Features	Site I11-A	Site I11-B	Site I11-C
Number of Parcels - Number of Owners	3-3	1-1 1 Easement Expected	2-2
Existing Land Use	Retail store, Office building	Warehouse	Grocery store, shopping center
Adjacent Land Use (Approx. number of buildings and dwelling units w/in 400 feet)	20	13	38
Complexity of Relocation	Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate (M)	Relative level of complexity in occupant relocations appear to be low (L)	Relocations include unique businesses with unique site requirements (H)
Wetland classification, characteristics, and potential impacts	No impact to wetlands or buffers.	No impact to wetlands or buffers.	No impact to wetlands or buffers.
Forested characteristics and potential impacts	None	None	None
Stream/buffer characteristics and potential impacts	Construction would not impact a stream or buffer.	Construction would not impact a stream or buffer.	Construction would not impact a stream or buffer.
Presence/habitat for special status species	Bald eagle presence is documented in the vicinity of the site, but the site does not provide suitable habitat.	Bald eagle presence is documented in the vicinity of the site, but the site does not provide suitable habitat.	Bald eagle presence is documented in the vicinity of the site, but the site does not provide suitable habitat.
Construction/Maintenance Access	Access from both directions (L)	Access from both directions (L)	Access from one direction only (M)
Distance to Tunnel Centerline	0	300	850

ROUTE 9 Influent Conveyance - Portal I11 (195th St and 228th St Alternative)

Portal Location: Vicinity of NE 175th and 68th Ave NE near Bothell Way and Juanita DR NE
Corridor Segments: Tunnel Access Portal for Segment I10-I11-I34

PORTAL AREA FEATURES

Engineering	
Portal Diameter	50 feet (Or square excavation 40 feet by 100 feet)
Purpose	TBM Launch/Receive
Portal Depth	45 feet
Candidate Site Size	2.3-4.3 acres
Portal Excavated Volume	4,000 CY
Tunnel Spoils Volume From Portal	52,000 CY
Depth to Groundwater	2 feet
Dewatering Flow Rate	20 – 250 gpm
Nearest Power Substation	Kenmore
King County Trunk Connection	Yes – Kenmore & Swamp Creek
Local System Connection	No
Environmental / Community	
Archaeological Site Probability	High
Range of Number of Parcels Req.	1 to 3
Range of Number of Owners Req.	1 to 3
Drinking Water Wells	No
Length of Activity at Portal	2.0 years
Site Contamination / Geologic Hazard Potential	No potential for contamination identified. Partially lies within liquefaction hazard
Area of Wetlands in Area	0
Length of Surface Streams in Area	0
Jurisdiction(s)	Kenmore

EVALUATION OF PORTAL SITES

OVERALL EVALUATION

All the candidate sites are suitable for portal construction and meet engineering requirements. Site I11-A has the advantage of the shortest conveyance length. This portal siting area is located at the commercial core of Kenmore. Most of the area is heavily developed commercial and industrial properties with minimal vegetative cover.

ENGINEERING

Geotechnical features of all three sites are mostly favorable to construction as they are on flat land posing no major landslide potential. Both Sites I11-A & I11-B provide adequate access for maintenance and construction from both directions, while Site I11-C provides access from one direction only. Site I11-A has the advantage of having the shortest conveyance length. King County trunk connection is required at Kenmore and Swamp Creek connections from site.

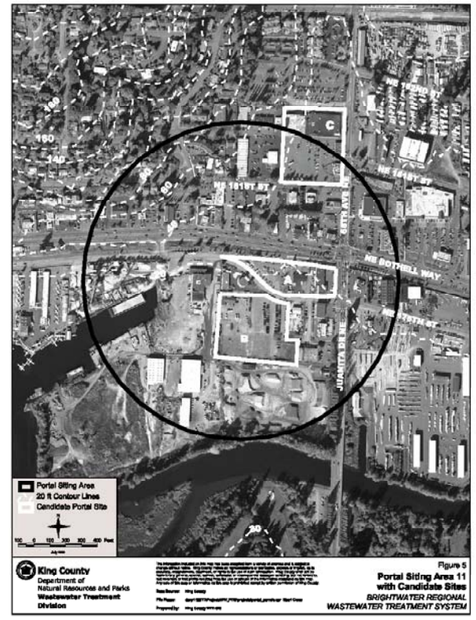
ENVIRONMENTAL / COMMUNITY

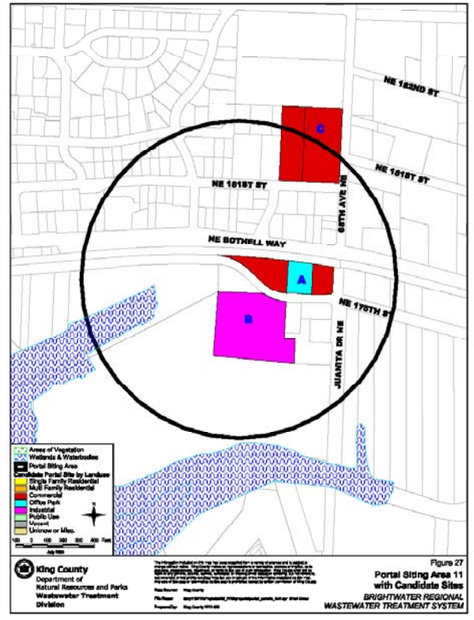
This portal siting area is located at the commercial core of Kenmore. Most of the area is heavily developed commercial and industrial properties with minimal vegetative cover. Site I11-A contains two commercial buildings and parking lots. Site I11-B is an automobile storage area. Site I11-C is part of a retail center. The proposed sites are similar in their lack of habitat.

LAND ACQUISITION

Heavily developed area has led to consideration of unimproved commercial properties that have open areas and are large parcels.

PORTAL AREA AND SITES





PORTAL SITES COMPARISON

Features	Site I11-A	Site I11-B	Site I11-C
Number of Parcels - Number of Owners	3-3	1-1 1 Easement Expected	2-2
Existing Land Use	Retail store, Office building	Warehouse	Grocery store, shopping center
Adjacent Land Use (Approx. number of buildings and dwelling units w/in 400 feet)	20	13	38
Complexity of Relocation	Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate (M)	Relative level of complexity in occupant relocations appear to be low (L)	Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate (M)
Wetland classification, characteristics, and potential impacts	No impact to wetlands or buffers.	No impact to wetlands or buffers.	No impact to wetlands or buffers.
Forested characteristics and potential impacts	None	None	None
Stream/buffer characteristics and potential impacts	Construction would not impact a stream or buffer.	Construction would not impact a stream or buffer.	Construction would not impact a stream or buffer.
Presence/habitat for special status species	Bald eagle presence is documented in the vicinity of the site, but the site does not provide suitable habitat.	Bald eagle presence is documented in the vicinity of the site, but the site does not provide suitable habitat.	Bald eagle presence is documented in the vicinity of the site, but the site does not provide suitable habitat.
Construction/Maintenance Access	Access from both directions (L)	Access from both directions (L)	Access from one direction only (M)
Distance to Tunnel Centerline	0	300	850

Unocal Influent Conveyance - Portal I12

Portal Location: Intersection of NE 183rd St and 80th Ave NE
Corridor Segments: Tunnel Access Portal for Segment I11-I34

PORTAL AREA FEATURES

Engineering	
Portal Diameter	50 feet
Purpose	TBM Launch/Receive
Minimum Depth	40 feet
Maximum Depth	60 feet
Candidate Site Size	2.1-3.1 acres
Portal Excavated Volume	4,000 – 5,000 CY
Tunnel Spoils Volume From Portal	87,000 CY
Depth to Groundwater	2 feet
Dewatering Flow Rate	Low
Nearest Power Substation	Kenmore
King County Trunk Connection	No
Local System Connection	No
Environmental / Community	
Archaeological Site Probability	High
Range of Number of Parcels Req.	1 to 2
Range of Number of Owners Req.	1 to 2
Drinking Water Wells	No
Length of Activity at Portal	2-4 years
Site Contamination / Geologic Hazard Potential	No potential for contamination identified.
Area of Wetlands in Area	approx. 17.75
Length of Surface Streams in Area	approx. 1,701
Jurisdiction(s)	Kenmore

EVALUATION OF PORTAL SITES

OVERALL EVALUATION

Both candidate sites within portal area 12 are suitable for portal construction. Site I12-C and I12-E are similar in that both parcels contain residential development and wet pastures that adjoin with the larger undisturbed Swamp Creek wetland. However, Site I12-C has the advantage of shorter conveyance length and better access for construction and maintenance.

ENGINEERING

Both candidate sites meet general engineering requirements and are suitable for portal construction. No significant geotechnical constraints were identified. In terms of access for construction and maintenance, Site I12-C has access from both directions, while Site I12-E has access from one direction only. Site I12-C also has the advantage of shortest conveyance length.

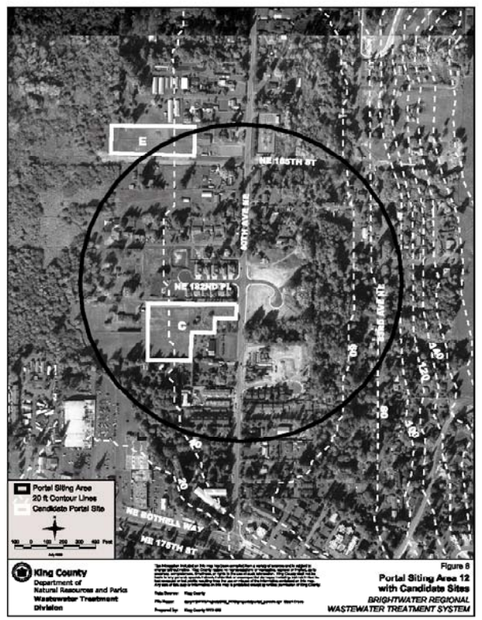
ENVIRONMENTAL / COMMUNITY

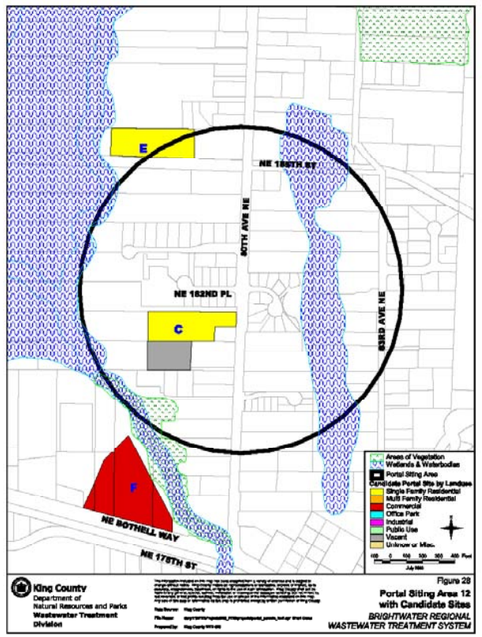
This portal siting area is located within the Swamp Creek valley. Sites I12-C and I12-E are similar in that the eastern portions of the parcels contain residential development and the western portions include wet pastures that adjoin with the larger undisturbed Swamp Creek wetland. Tree canopy cover is minimal at both sites.

LAND ACQUISITION

Scarcity of vacant property w/o sensitive area exclusions has led to consideration of other uses.

PORTAL AREA AND SITES





PORTAL SITES COMPARISON

Features	Site I12-C	Site I12-E
Number of Parcels - Number of Owners	2-2	1-1
Existing Land Use	Single Family (Res. Use/Zone), Vacant (Single-family)	Single Family (Res. Use/Zone)
Adjacent Land Use (Approx. number of buildings and dwelling units w/in 400 feet)	24	21
Complexity of Relocation	Relative level of complexity in occupant relocations appear to be low (L)	Relative level of complexity in occupant relocations appear to be low (L)
Wetland classification, characteristics, and potential impacts	Likely impact to a Category 3, wet pasture wetland.	Likely impact to a Category 3, wet pasture wetland.
Forested characteristics and potential impacts	No impact to forest habitat.	No impact to forest habitat.
Stream/buffer characteristics and potential impacts	Construction would not impact a stream or stream buffer.	Construction could impact Swamp Creek or its buffer.
Presence/habitat for special status species	No suitable habitat for special status species on the site. Documented great blue heron presence in the vicinity.	No suitable habitat for special status species on the site. Documented great blue heron presence in the vicinity.
Construction/Maintenance Access	Access from both directions (L)	Access from one direction only (M)
Distance to Tunnel Centerline	0	500

Unocal Influent Conveyance - Portal I13

Portal Location: Intersection of Bothell Way NE and Woodinville Drive
Corridor Segments: Deep Tunnel Access Portal for Segment I14-I13-I12

PORTAL AREA FEATURES

Engineering	
Portal Diameter	50 feet
Purpose	TBM Launch/Receive
Minimum Depth	30 feet
Maximum Depth	30 feet
Candidate Site Size	2.0-3.0 acres
Portal Excavated Volume	2,700 CY
Tunnel Spoils Volume From Portal	38,000 CY
Depth to Groundwater	2 feet
Dewatering Flow Rate	Low
Nearest Power Substation	Wayne, Norway Hill
King County Trunk Connection	No
Local System Connection	No
Environmental / Community	
Archaeological Site Probability	High
Range of Number of Parcels Req.	2 to 3
Range of Number of Owners Req.	1 to 2
Drinking Water Wells	No
Length of Activity at Portal	2-4 years
Site Contamination / Geologic Hazard Potential	No potential for contamination identified.
Acres of Wetlands	1.20
Linear Feet of Streams	1,730
Jurisdiction(s)	Bothell

EVALUATION OF PORTAL SITES

OVERALL EVALUATION

All the candidate sites are suitable for portal construction. Site I13-B is located adjacent to the greatest number of residences and is immediately adjacent to the Sammamish River. None of the sites contain wetland or upland forested areas; however, Horse Creek flows along the western boundary of Site I13-A.

ENGINEERING

Geotechnical features of the three sites are suitable for construction without any slope stability issues. The three candidate sites have adequate construction and maintenance access from both directions. Site I13-A and I13-C have the advantage of minimal conveyance length.

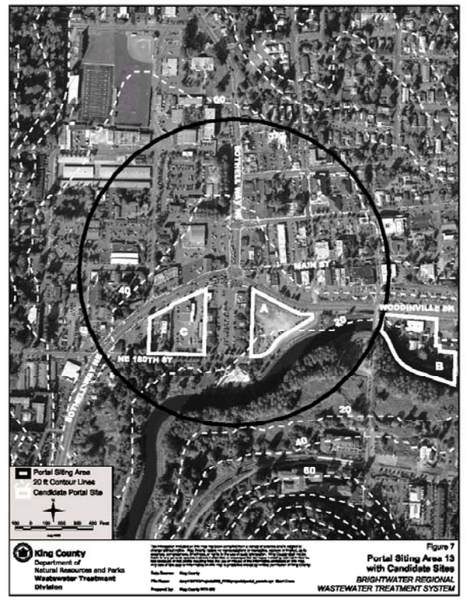
ENVIRONMENTAL / COMMUNITY

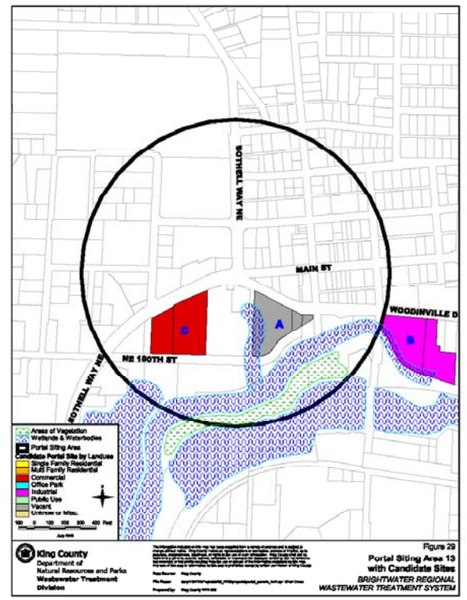
All sites within portal area I13, located in the highly developed City of Bothell downtown area, are located in close proximity to the Sammamish River. Site I13-B, located adjacent to a mobile home park, is adjacent to the greatest number of residences and is immediately adjacent to the Sammamish River. None of the sites contain wetland or upland forested areas; however, Horse Creek flows along the western boundary of Site I13-A. Water quality in Sammamish River will be a concern during construction. Potential dewatering impacts to Sammamish River will be of concern for all sites. Sammamish River includes presence of federally endangered Chinook salmon.

LAND ACQUISITION

Scarcity of vacant property w/o sensitive area exclusions has led to consideration of developed properties in this urban area.

PORTAL AREA AND SITES





PORTAL SITES COMPARISON

Features	Site I13-A	Site I13-B	Site E13-C
Number of Parcels - Number of Owners	3-1	2-2	2-2
Existing Land Use	Undeveloped/vacant land	Industrial; within Shoreline Zone of Sammamish River.	Fast food restaurant and retail
Adjacent Land Use (Approx. number of buildings and dwelling units w/in 400 feet)	29	62	23
Complexity of Relocation	Relative level of complexity in occupant relocations appears to be low (L)	Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate (M)	Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate (M)
Wetland classification, characteristics, and potential impacts	Construction would not impact a wetland or wetland buffer.	Construction would not impact a wetland or wetland buffer.	Construction would not impact a wetland or wetland buffer.
Forested characteristics and potential impacts	Newly planted native trees and shrubs have been planted along the west site boundary on the steep banks of Horse Creek.	No forested habitat is present.	No forested habitat is present.
Stream/buffer characteristics and potential impacts	The Sammamish River is located 100 feet south of the site; a tributary stream (Horse Creek) located along the west site boundary. Construction may impact buffer of Horse Creek. Potential for dewatering impacts to Sammamish River and Horse Creek will be of concern.	Sammamish River is located immediately south of the site with minimal separation. Minimal buffer is currently available. Construction in Shoreline Zone likely required. Potential dewatering impacts to Sammamish River of concern.	Sammamish River is located approximately 250 feet south of the site. This site provides greatest separation between river and portal site.
Presence/habitat for special status species	Potential for impacts to habitat areas for special status priority species in adjacent areas are expected to be low though the Sammamish River, a salmonid bearing (Chinook) water is located 100 feet south of the site.	Impacts to habitat areas for special status priority species are expected to be low, though the site is adjacent to the Sammamish River, a salmonid bearing (Chinook) water.	The nearest habitat for special status fish species is 250 feet south to the site.
Construction/Maintenance Access	Access from both directions from SR-522.	Access from both directions from SR-522.	Access from both directions from SR-522.
Distance to Tunnel Centerline	0	800	0

Unocal Influent Conveyance - Portal I14

Portal Location: Intersection of North Creek Pkwy & 120th Ave NE
Corridor Segments: Tunnel Access Portal for Segment I14-I13

PORTAL AREA FEATURES

Engineering	
Portal Diameter	50 feet
Purpose	TBM Launch/Receive
Portal Depth	50 feet
Candidate Site Size	3.2-4.0 acres
Portal Excavated Volume	2,000 CY
Tunnel Spoils Volume From Portal	174,000 CY
Depth to Groundwater	2 feet
Dewatering Flow Rate	40 – 80 gpm
Nearest Power Substation	Vitulli
King County Trunk Connection	No
Local System Connection	No
Environmental / Community	
Archaeological Site Probability	High
Range of Number of Parcels Req.	1
Range of Number of Owners Req.	1
Drinking Water Wells	No
Length of Activity at Portal	1 Year
Site Contamination / Geologic Hazard Potential	Potential for contamination upon identified contamination or activities
Area of Wetlands in Area	
Length of Surface Streams in Area	
Jurisdiction(s)	Bothell

EVALUATION OF PORTAL SITES

OVERALL EVALUATION

Overall the three sites within site area I14 are suitable for portal construction. All sites meet general engineering requirements. Potential construction impacts to surrounding occupants would be greatest at Site I14-A and I14-B due to the close proximity of professional office complexes. A small Class 3 wetland is located on Site I14D. Sites I14B and I14A are located adjacent to a large wetland area associated with a North Creek tributary. North Creek has a documented presence of federally endangered Chinook salmon.

ENGINEERING

The three sites have land suitable for construction without any slope stability issues. Adequate access for construction and maintenance from both directions is available for all of the sites. Site I14-D requires longer conveyance length, however, the conveyance length for all of the sites can be considered high.

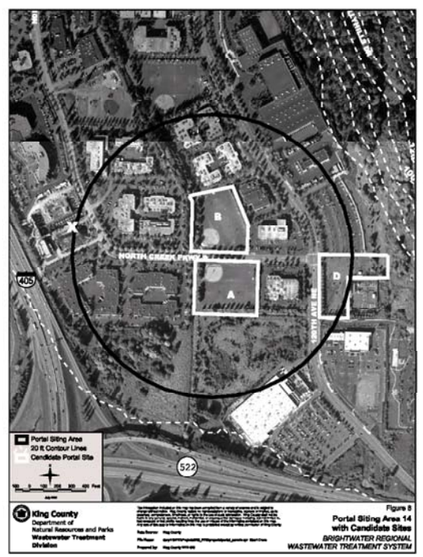
ENVIRONMENTAL / COMMUNITY

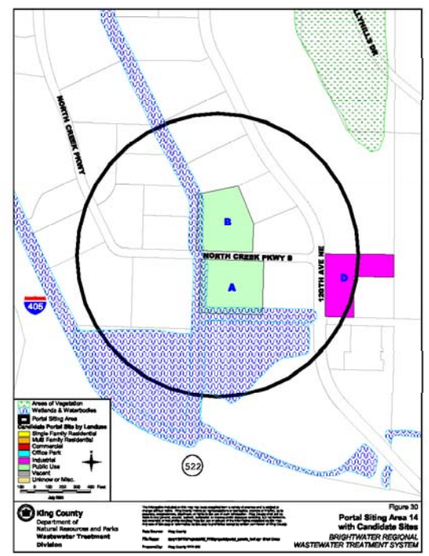
The three sites within portal area 14 are all located in a business park area of the City of Bothell. Sites I14-A and I14-B are currently occupied by baseball/softball fields, with a North Creek tributary flowing along the west boundary of both sites. Potential dewatering impacts to North Creek tributary will be of concern during construction of I14A and I14B. Potential construction impacts to surrounding occupants would be greatest at Site I14-A and I14-B due to the close proximity of professional office complexes. No upland forested areas are located on any of the sites. A small Class 3 wetland is located on Site I14D. Sites I14A are located adjacent to a large wetland area associated with a North Creek tributary and Site I14-B and Site I14-D are located approximately 500 and 700 feet away from the wetland. Dewatering at these sites could affect this wetland. Construction at Sites I14-A or I14-B could affect the North Creek tributary and subsequently the water quality in North Creek. However, the tributary buffer at these locations is currently disturbed and occupied by playing fields. North Creek has a documented presence of federally endangered Chinook salmon.

LAND ACQUISITION

Scarcity of vacant property w/o sensitive area exclusions has led to consideration of ball fields and open space/parking – small area needs after construction make main impact temporary for these uses.

PORTAL AREA AND SITES





PORTAL SITES COMPARISON

Features	Site I14-A	Site I14-B	Site I14-D
Number of Parcels - Number of Owners	1-1	1-1	1-1
Existing Land Use	Baseball/softball field	Baseball/softball field	Undeveloped/Vacant Land
Adjacent Land Use (Approx. number of buildings and dwelling units w/in 400 feet)	25	11	1
Complexity of Relocation	Relative level of complexity in occupant relocations appears to be low (L)	Relative level of complexity in occupant relocations appears to be low (L)	Relative level of complexity in occupant relocations appears to be low (L)
Wetland classification, characteristics, and potential impacts	Construction in close proximity to large, likely high quality wetland associated with North Creek tributary. Potential dewatering impacts will be of concern. Construction would not impact a wetland or wetland buffer.	Dewatering to North Creek tributary could be a concern for a large, high quality wetland associated with North Creek 500 feet south to the site.	Construction is likely to directly impact a Category 3 emergent wetland swale located on the south portion of the site. Dewatering may affect a large wetland south of the site.
Forested characteristics and potential impacts	No forested area is present.	No forested area is present.	No forested area is present.
Stream/buffer characteristics and potential impacts	Construction may temporarily affect the water quality of North Creek located along the west site boundary. Potential dewatering impacts to North Creek tributary will be a concern during construction.	Construction may temporarily affect the water quality of North Creek located along the west site boundary. Potential dewatering impacts to North Creek tributary will be a concern during construction	Construction may temporarily affect the water quality of North Creek or its scrub-shrub buffer located approximately 700 feet west of the site.
Presence/habitat for special status species	Impacts to habitat areas for special status priority species are expected to be low because the North Creek buffer located on the site is already disturbed by playing fields.	Impacts to habitat areas for special status priority species are expected to be low because the North Creek buffer located on the site is already disturbed by playing fields.	Impacts to habitat areas for special status species are expected to be low because North Creek is located approximately 700 feet west of the site and no habitat exists on the site.
Construction/Maintenance Access	Access from both directions. (L)	Access from both directions. (L)	Access from both directions. (L)
Distance to Tunnel Centerline	1250	1250	2800

ROUTE 9 Effluent Conveyance - Portal E19 (195th St and 228th St Alternative)

Portal Location: NW 205th St and Richmond Beach Dr NW in Shoreline
Corridor Segments: Tunnel Access Portal for Segment E23-E19

PORTAL AREA FEATURES

Engineering	
Portal Diameter	50 feet (Or Square excavation 40 ft by 10 ft)
Purpose	TBM Launch/Receive
Portal Depth	40 feet
Candidate Site Size	1.9-8.5 acres
Portal Excavated Volume	4,000 CY
Tunnel Spoils Volume From Portal	0 CY
Depth to Groundwater	15 feet
Dewatering Flow Rate	1 to 250 gpm
Nearest Power Substation	Westgate, Richmond Park
King County Trunk Connection	No
Local System Connection	No
Environmental / Community	
Archaeological Site Probability	High – medium
Range of Number of Parcels Req.	1
Range of Number of Owners Req.	1
Drinking Water Wells	No
Length of Activity at Portal	3.5 Years
Site Contamination / Geologic Hazard Potential	Potential for excavation of contaminated soil and groundwater
Area of Wetlands in Area (acres)	approx. 4.2
Length of Surface Streams in Area	approx. 2,436
Jurisdiction(s)	Woodway, Shoreline, Edmonds

EVALUATION OF PORTAL SITES

OVERALL EVALUATION

All the candidate sites are suitable for portal construction. No significant geotechnical constraints were identified. Land acquisition for all the three sites is relatively uncomplicated, imposing low impact to existing land use. Construction of a portal at site E19-A may affect the adjacent perennial stream, sloped wetland, and adjacent riparian vegetation. There is a strong potential for surface soil contamination at site E19-C. Site E19-E is largely developed and landscaped.

ENGINEERING

Geotechnical features of the three sites are favorable to construction because they are on flat land posing no landslide potential. Both Sites E19-C & E19-E provide adequate access for maintenance and construction. Site A requires access through private property and a residential neighborhood. Site E19-C has the shortest conveyance length; however, there is high potential for contamination of surface soil at the northern part of the site due to an existing petroleum storage facility.

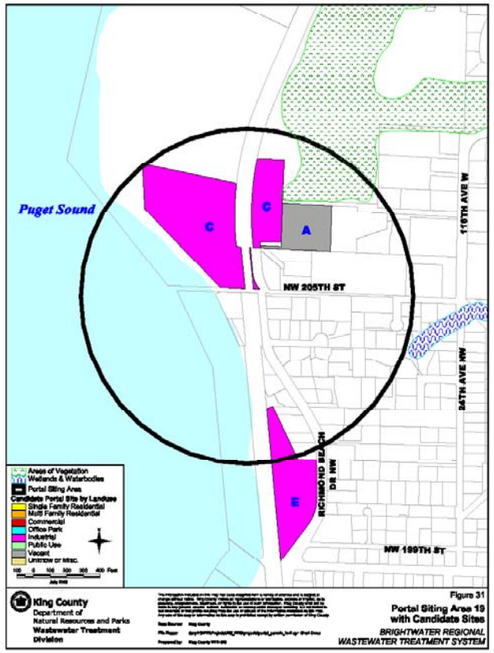
ENVIRONMENTAL / COMMUNITY

This portal area is directly adjacent to Puget Sound. Site E19-A is located on a hill slope above the Sound. It contains a small perennial stream, riparian and sloped wetlands, and a narrow riparian corridor of young deciduous forest. Site E19-C is the southern portion of a large industrial property (Pt. Wells oil facility) that is cleared, compacted, partially paved, and contains a portion of a building structure. The stream that crosses site A flows through a culvert underneath site E19-C. Site E19-E is an existing pump station site surrounded by a residential neighborhood. Site E19-E is largely landscaped and cleared for views.

LAND ACQUISITION

All the candidate sites appear to have sufficient undeveloped area for portal location.

PORTAL AREA AND SITES



PORTAL SITES COMPARISON

Features	Site E19-A	Site E19-C	Site E19-E
Number of Parcels - Number of Owners	1-1 2 Easement Parcels Estimated	1-1 1 Easement Parcels Estimated as tunnel easement	1-1 1 Easement Parcels Estimated
Existing Land Use	Undeveloped (vacant) land	Petroleum Storage and Asphalt Operation on the northern portion of the ownership	Public Utility
Adjacent Land Use (Approx. number of buildings and dwelling units w/in 400 feet)	16	15	48
Complexity of Relocation	Relative level of complexity in occupant relocations appear to be low (L)	Relative level of complexity in occupant relocations appear to be low (L)	Relative level of complexity in occupant relocations appear to be low (L)
Wetland classification, characteristics, and potential impacts	Likely impact to a Category 3 wetland and associated buffer. The wetland and buffer contain dominant shrub vegetation and are sloped.	Likely impact to potential Category 3 wetlands located west of the railroad tracks. Potential wetlands and buffers are vegetated with grass only.	No impact to wetlands or buffers.
Forested characteristics and potential impacts	Likely impact to young deciduous forest with high invasive species presence.	Construction would not impact forest habitat.	Construction would not impact forest habitat.
Stream/buffer characteristics and potential impacts	Potential impact to a small stream and narrow forested buffer.	Potential impact to a small stream (same stream that is on Site E19-A) that is culverted under the site.	Construction would not impact a stream or stream buffer.
Presence/habitat for special status species	Documented presence and suitable mature forest habitat for bald eagles located directly north of the site. Adjacent forest and nearshore areas provide potential habitat for additional special status birds.	Mature forest habitat and nearshore habitat adjacent to the site provides suitable habitat for special status species (see Site E19-A) and documented presence of bald eagles.	Mature forest habitat near the site and nearshore habitat adjacent to the site provides suitable habitat for special status species (see Site E19-A) and documented presence of bald eagles.
Construction/Maintenance Access	Access through private property or residential neighbor with small streets (H)	Access from both directions (L)	Access from one direction only (M)
Distance to Tunnel Centerline	400	100	800

ROUTE 9 Effluent Conveyance - Portal E22 (228th St. Alternative)

Portal Location: Intersection of NW 205th Street (244th Street SW) and 8th Ave NW
Corridor Segments: Tunnel Access Portal for Segment E19-E22-E24

PORTAL AREA FEATURES

Engineering	
Portal Diameter	50 feet
Purpose	TBM Launch/Receive
Minimum Depth	200 feet
Maximum Depth	370 feet
Candidate Site Size	2.2-3.3 acres
Portal Excavated Volume	5,000-34,000 CY
Tunnel Spoils Volume From Portal	38,000 CY
Depth to Groundwater	130 feet
Dewatering Flow Rate	High
Nearest Power Substation	Westgate, Richmond Park
King County Trunk Connection	No
Local System Connection	No
Environmental / Community	
Archaeological Site Probability	Low
Range of Number of Parcels Req.	2 to 10
Range of Number of Owners Req.	2 to 10
Drinking Water Wells	No
Length of Activity at Portal	2-4 Years
Site Contamination / Geologic Hazard Potential	Potential for excavation of contamination soils is limited to surface soil
Area of Wetlands in Area	0
Length of Surface Streams in Area	0
Jurisdiction(s)	Shoreline, Edmonds

EVALUATION OF PORTAL SITES

OVERALL EVALUATION

All the candidate sites are suitable for portal construction. No significant engineering constraints were identified. Sites E22-C and E22-D may require geotechnical work to minimize landslide potential. The sites are within a mostly developed residential community. Site E22-E would require access through private properties. Both Sites E22-C and E22-D have potential to impact a small patch of a mature coniferous forest.

ENGINEERING

Both Site E22-C and E22-D have slope greater than 30 percent and therefore some geotechnical work may be required to minimize the landslide potential and maintain slope stability. Site E22-E has land suitable for construction without major slope stability issues. Site E22-C has access for construction and maintenance from both directions whereas Site E22-D has access from one direction only. Site E22-E would require access through private properties. Site E22-C has the shortest conveyance length.

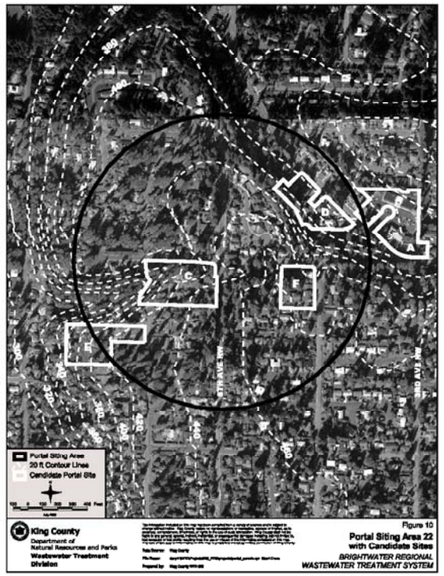
ENVIRONMENTAL / COMMUNITY

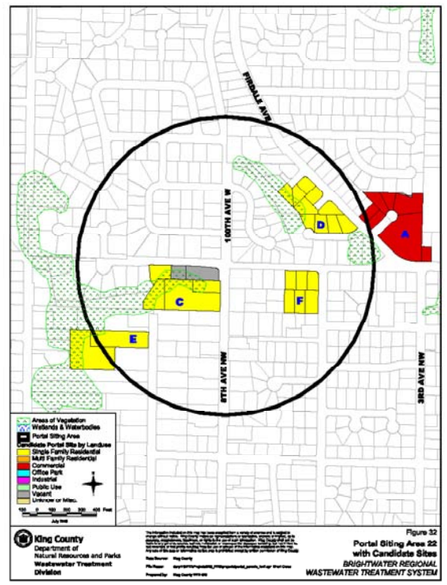
These sites are within a mostly developed residential community. Small patches of mature forest are scattered throughout the portal area and abut Sites E22-D and E22-E. Site E22-C contains a patch of mature coniferous forest in a steep ravine. Sites E22-C, E22-D, and E22-E have similar habitat features. Site E22-F is residential with occasional mature conifers.

LAND ACQUISITION

Sufficient undeveloped land is not available in this urban area. Therefore, developed parcels generally buffered from other uses are being considered as portal sites.

PORTAL AREA AND SITES





PORTAL SITES COMPARISON

Features	Site E22-C	Site E22-D	Site E22-E	Site E22-F
Number of Parcels - Number of Owners	6-6	10-10	2-2 2 Easement Parcels Estimated	6-6
Existing Land Use	Single Family (Residence Use/Zone), Vacant (Single family)	Single Family Residence – Detached	Single Family (Residence Use/Zone)	Single Family (Residence Use/Zone)
Adjacent Land Use (Approx. number of buildings and dwelling units w/in 400 feet)	66	56	39	55
Complexity of Relocation	Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate (M)	Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate (M)	Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate (M)	Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate (M)
Wetland classification, characteristics, and potential impacts	No impact to wetlands or buffers.	No impact to wetlands or buffers.	No impact to wetlands or buffers.	No impact to wetlands or buffers.
Forested characteristics and potential impacts	Likely impact to a patch of mature coniferous forest within a steep ravine.	Potential impact to a small portion of mature coniferous forest at the western edge of site.	No potential impact to forest habitat.	Occasional mature conifers on site.
Stream/buffer characteristics and potential impacts	Construction would not impact a stream or buffer.	Construction would not impact a stream or buffer.	Construction would not impact a stream or buffer.	Construction would not impact a stream or buffer.
Presence/habitat for special status species	There is no documented presence or potential habitat for special status species on the site or directly adjacent.	Mature forest habitat on the site provides potential habitat for special status species such as pileated woodpecker and Vaux's swift.	Mature forest adjacent to site provides potential habitat for special status species such as pileated woodpecker and Vaux's swift.	There is no documented presence or potential habitat for special status species on the site or directly adjacent.
Construction/Maintenance Access	Access from both directions (L)	Access from one direction only (M)	Access through private property or residential neighbor with small streets (H)	Access from both directions (L)
Distance to Tunnel Centerline	180	500	580	180

ROUTE 9 Effluent Conveyance - Portal E23 (195th St Alternative)

Portal Location: Intersection of NW 205th Street (244th Street SW) and Firdale Ave
Corridor Segments: Tunnel Access Portal for Segment E19-E23-E27

PORTAL AREA FEATURES

Engineering	
Portal Diameter	50 feet
Purpose	
Minimum Depth	200 feet
Maximum Depth	455 feet
Candidate Site Size	2.2-3.1 acres
Portal Excavated Volume	5,000-42,000 CY
Tunnel Spoils Volume From Portal	48,000 CY
Depth to Groundwater	130 feet
Dewatering Flow Rate	High
Nearest Power Substation	
King County Trunk Connection	No
Local System Connection	No
Environmental / Community	
Archaeological Site Probability	Low
Range of Number of Parcels Req.	6 to 10
Range of Number of Owners Req.	4 to 10
Drinking Water Wells	No
Length of Activity at Portal	2-4 Years
Site Contamination / Geologic Hazard Potential	No potential for contamination identified.
Area of Wetlands in Area	0
Length of Surface Streams in Area	0
Jurisdiction(s)	Edmonds

EVALUATION OF PORTAL SITES

OVERALL EVALUATION

Both candidate sites are suitable for portal construction because they meet the general engineering requirements. Site E23-D may require some geotechnical work to minimize the potential for landslide. Both portal sites are within a mostly developed residential community. Small patches of mature forest are scattered throughout the portal area and abut site E23-D. Site E23-A is the site of the Fircrest Village retail center and land acquisition is expected to have adverse impact on the existing land use. Site E23-D has mature forest that provides habitat for species such as pileated woodpecker and Vaux's swift.

ENGINEERING

Site E23-D has slope greater than 30 percent and therefore some geotechnical work may be required to minimize the potential for landslide and maintain slope stability. Site E23-A has land suitable for construction without any major slope stability issues. In terms of access for construction and maintenance, Site E23-A has access from both directions whereas Site E23-D has access from one direction only. Site E23-D has the advantage of having shortest conveyance length.

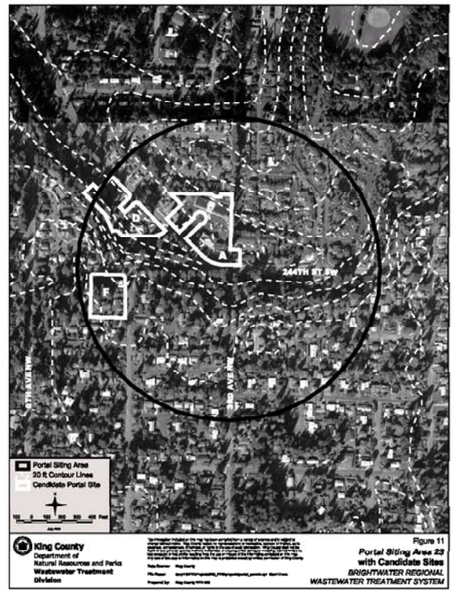
ENVIRONMENTAL / COMMUNITY

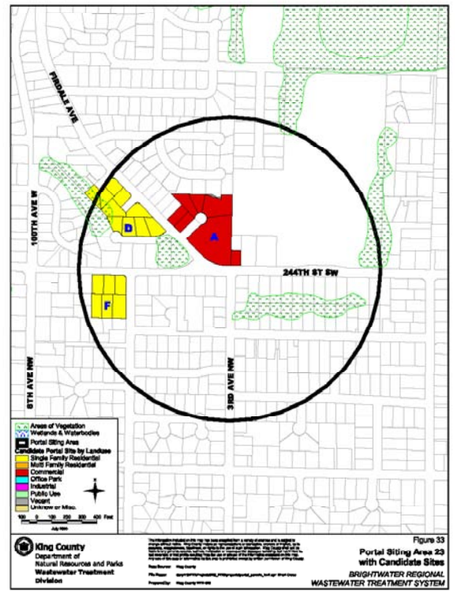
This portal area is within a mostly developed residential community. Small patches of mature forest are scattered throughout the portal area and abut site E23-D. Site E23-A is the site of the Fircrest Village retail center. Site E23-D is residential. Sites E23-A and E23-D are similar in their habitat features. Site E22-F is residential with occasional mature conifers.

LAND ACQUISITION

Undeveloped area is insufficient, so developed commercial and residential parcels are being considered.

PORTAL AREA AND SITES





PORTAL SITES COMPARISON

Features	Site E23-A	Site E23-D	Site E23-F
Number of Parcels - Number of Owners	8-4	10-10	6
Existing Land Use	Other Retail Trade (Food NEC), Other professional services, Undeveloped vacant land	Single Family Residence – Detached	Single Family Residence – Detached
Adjacent Land Use (Approx. number of buildings and dwelling units w/in 400 feet)	105	56	55
Complexity of Relocation	Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate (M)	Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate (M)	Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate (M)
Wetland classification, characteristics, and potential impacts	No impact to wetlands or buffers.	No impact to wetlands or buffers.	No impact to wetlands or buffers.
Forested characteristics and potential impacts	No forest habitat on site. Occasional mature conifers adjacent to site.	Potential impact to a small portion of mature coniferous forest at the western edge of site.	Occasional mature conifers on site.
Stream/buffer characteristics and potential impacts	Construction would not impact a stream or buffer.	Construction would not impact a stream or buffer.	Construction would not impact a stream or buffer.
Presence/habitat for special status species	There is no documented presence or potential habitat for special status species.	Mature forest habitat provides potential habitat for special status species such as pileated woodpecker and Vaux's swift.	There is no documented presence or potential habitat for special status species on the site or directly adjacent.
Construction/Maintenance Access	Access from both directions (L)	Access from one direction only (M)	Access from both directions (L)
Distance to Tunnel Centerline	1180	500	180

Route 9 Effluent Conveyance - Portal E24 (228th St Alternative)

Portal Location: Intersection of 228th Street SW and 95th Place W
Corridor Segments: Deep Tunnel Access Portal for Segment E26-E24-E22

PORTAL AREA FEATURES

Engineering	
Portal Diameter	50 feet
Purpose	TBM Launch/Receive
Minimum Depth	140 feet
Maximum Depth	340 feet
Candidate Site Size	2.1-2.4 acres
Portal Excavated Volume	5,000-31,000 CY
Tunnel Spoils Volume From Portal	47,000 CY
Depth to Groundwater	70 feet
Dewatering Volume for Disposal	High (force main)
Nearest Power Substation	Westgate, Maplewood
King County Trunk Connection	No
Local System Connection	No
Environmental / Community	
Archaeological Site Probability	Low
Range of Number of Parcels Req.	6 to 8
Range of Number of Owners Req.	4-6
Drinking Water Wells	No
Length of Activity at Portal	2-4 Years
Site Contamination / Geologic Hazard Potential	Potential for excavation of contaminated soil is limited to surface soil
Acres of Wetlands	0
Linear Feet of Streams	0
Jurisdiction(s)	Edmonds

EVALUATION OF PORTAL SITES

OVERALL EVALUATION

Both candidate sites are suitable for portal construction. No significant engineering constraints were identified. Located in the City of Edmonds, this highly developed portal area is occupied mostly by single-family residences. Sites E24-B and E24-C have residential development, and Site E24-A is mostly cleared for development. There are no significant impacts to adjacent environment from construction at Sites E24-B and E24-C. However, there are traces of forest composed of red alder, Douglas fir, and Himalayan blackberry present on the north portion of Site E24-C. All sites have comparable conveyance lengths.

ENGINEERING

The sites have land suitable for construction without slope stability issues. Both Sites E24-A and E24-B have construction and maintenance access from both directions, and Site E24-C has access from one direction only.

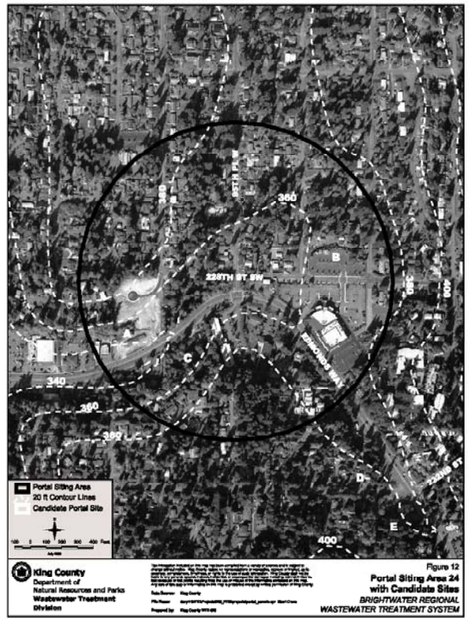
ENVIRONMENTAL / COMMUNITY

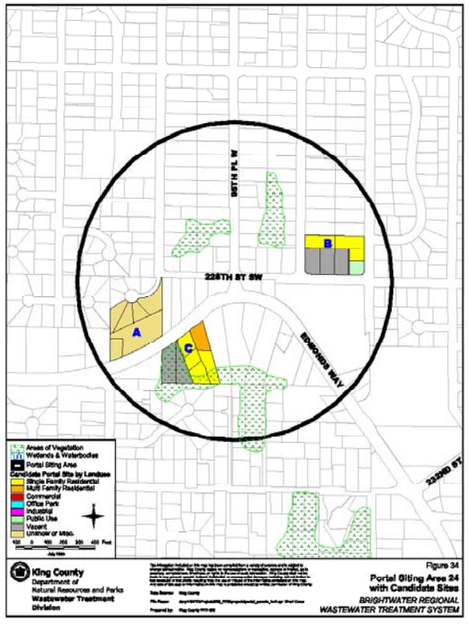
Located in the City of Edmonds, this highly developed portal area is occupied mostly by single-family residences. Sites E24-B and E24-C are at least partially occupied by single-family residences. Site E24-A is composed mainly of an area cleared for development, and no housing units have been constructed. Site E24-C has the highest density of adjacent residences. No streams, wetlands, mature upland forested areas, or documented special status species habitat occupy any portion of the sites.

LAND ACQUISITION

Undeveloped parcels are insufficient for construction. Therefore, adjacent developed parcels are under consideration.

PORTAL AREA AND SITES





PORTAL SITES COMPARISON

Features	Site E24-A	Site E24-B	Site E24-C
Number of Parcels - Number of Owners	6	8-4	7-6
Existing Land Use	Undeveloped single-family residential development.	Single family residential and a parking lot.	Single family residential and undeveloped/vacant land.
Adjacent Land Use (Approx. number of buildings and dwelling units w/in 400 feet)	68	70	86
Complexity of Relocation	Relative level of complexity in occupant relocations appear to be low (L)	Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate (M)	Relative level of complexity in occupant relocations appear to be low (L)
Wetland classification, characteristics, and potential impacts	Construction would not impact a wetland or wetland buffer.	Construction would not impact a wetland or wetland buffer.	Construction would not impact a wetland or wetland buffer.
Forested characteristics and potential impacts	No forested area is present.	No forested area is present.	Immature forest composed of red alder, Douglas fir, and Himalayan blackberry is present on the north portion of this site.
Stream/buffer characteristics and potential impacts	Construction would not impact a stream or stream buffer.	Construction would not impact a stream or stream buffer.	Construction would not impact a stream or stream buffer.
Presence/habitat for special status species	There is no documented presence or habitat for special status species.	There is no documented presence or habitat for special status species.	There is no documented presence or habitat for special status species.
Construction/Maintenance Access	Access from both directions. (L)	Access from both directions. (L)	Access from one direction only. (M)
Distance to Tunnel Centerline	250	180	250

ROUTE 9 Effluent Conveyance - Portal E26 (228th St Alternative)

Portal Location: Intersection of 228th Street SW and Lakeview Drive
Corridor Segments: Deep Tunnel Access Portal for Segment E30-E26-E24

PORTAL AREA FEATURES

Engineering	
Portal Diameter	30 feet
Purpose	TBM Launch/Receive
Portal Depth	200 feet
Candidate Site Size	3.0-8.9 acres
Portal Excavated Volume	7,000 CY
Tunnel Spoils Volume From Portal	112,000 CY
Depth to Groundwater	5 feet
Dewatering Flow Rate	1-10 gpm
Nearest Power Substation	Ballinger
King County Trunk Connection	No
Local System Connection	No
Environmental / Community	
Archaeological Site Probability	High
Range of Number of Parcels Req.	1 to 6
Range of Number of Owners Req.	1 to 6
Drinking Water Wells	No
Length of Activity at Portal	1 Year
Site Contamination / Geologic Hazard Potential	Potential for excavation of contamination soils is limited to surface soil
Acres of Wetlands	1.55
Linear Feet of Streams	1,923
Jurisdiction(s)	Mountlake Terrace, Edmonds

EVALUATION OF PORTAL SITES

OVERALL EVALUATION

All the candidate sites are suitable for portal construction and meet the engineering requirements. The sites are surrounded by dense residential development including single-family and multi-family dwellings. Different land uses occupy all three sites, with the greatest potential impacts to sensitive areas likely to occur with construction at Site E26-D. A single-family residence and a high quality stream (Hall Creek), associated wetland, and mature forested area occupy this site. Site E26-D has the advantage of shorter conveyance length compared to the other two sites.

ENGINEERING

Geotechnical features of all three sites are favorable to construction as they are on flat land posing no landslide potential. All of the candidate sites have access from both directions. Site E26-D has the advantage of shorter conveyance length compared to the other two sites.

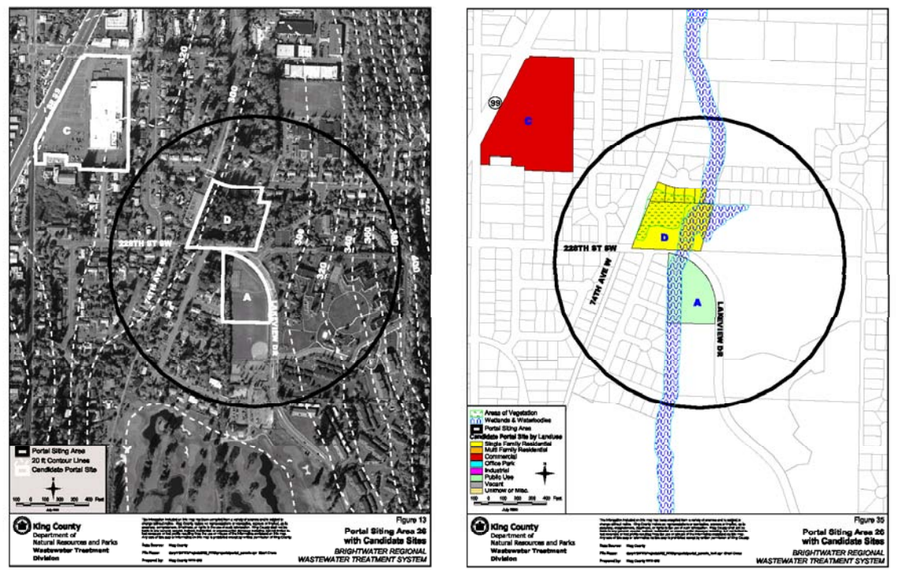
ENVIRONMENTAL / COMMUNITY

Site E26-C is located in the City of Edmonds; Sites E26-A and E26-D are within the City of Mountlake Terrace. All sites are surrounded by dense residential development including single-family and multi-family dwellings. Different land uses occupy all three sites, with the greatest potential impacts to sensitive areas likely to occur with construction at Site E26-D. A single-family residence and a high quality stream (Hall Creek), associated wetland, and mature forested area occupy this site. Hall Creek also flows along the west boundary of Site E26-A.

LAND ACQUISITION

Vacant property without sensitive area exclusions is insufficient for construction. Therefore, other uses are being considered and evaluated.

PORTAL AREA AND SITES



PORTAL SITES COMPARISON

Features	Site E26-A	Site E26-C	Site E26-D
Number of Parcels - Number of Owners	1-1	1-1	6-6
Existing Land Use	Athletic Fields	Retail and associated parking lot.	Single family residential.
Adjacent Land Use (Approx. number of buildings and dwelling units w/in 400 feet)	74	89	87
Complexity of Relocation	Relative level of complexity in occupant relocations appear to be low (L)	Relocations include unique businesses with unique requirements. (H)	Relative level of complexity in occupant relocations appears to be low (L)
Wetland classification, characteristics, and potential impacts	The site would not impact a wetland or wetland buffer.	The site would not impact a wetland or wetland buffer.	It is likely that construction would impact a Category 2 wetland or buffer associated with Hall Creek and extending across the east half of the site.
Forested characteristics and potential impacts	No forested area is present.	No forested area is present.	A heavily mature forested area dominated by large Douglas firs, red alder, and western hemlock extends throughout the site.
Stream/buffer characteristics and potential impacts	Hall Creek flows along the west site boundary. The Hall Creek buffer is already disturbed at this site, limited to a single row of oak and alder trees. Potential dewatering impacts would be of concern.	Construction would not impact a stream or stream buffer.	It is likely that construction would impact Hall Creek and its forested and scrub-shrub wetland buffer extending across the east half of the site. Potential for construction-related dewatering impacts to the stream and wetland would be of concern.
Presence/habitat for special status species	Impacts to habitat areas for threatened/endangered/candidate/state priority species are expected to be low because the Hall Creek buffer is already disturbed. Special status fish species such as coho salmon occur in Hall Creek.	There is no documented presence or habitat for special status species.	Potential impacts to habitat areas for special status priority species are expected to be high because the east half of the site contains Hall Creek and its forested buffer.
Construction/Maintenance Access	Access from both directions. (L)	Access from both directions. (L)	Access from both directions. (L)
Distance to Tunnel Centerline	425	830	180

ROUTE 9 Effluent Conveyance - Portal E27 (195th St Alternative)

Portal Location: Intersection of NE 205th Street (244th Street SW) and 1st Ave NE
Corridor Segments: Deep Tunnel Access Portal for Segment E7-E27-E23

PORTAL AREA FEATURES

Engineering	
Portal Diameter	50 feet
Purpose	TBM Launch/Receive
Minimum Depth	50 feet
Maximum Depth	350 feet
Candidate Site Size	2.6-7.2 acres
Portal Excavated Volume	12,000-32,000 CY
Tunnel Spoils Volume From Portal	48,000 CY
Depth to Groundwater	30 feet
Dewatering Flow Rate	High
Nearest Power Substation	Ballinger
King County Trunk Connection	No
Local System Connection	No
Environmental / Community	
Archaeological Site Probability	High – medium
Range of Number of Parcels Req.	1 to 4
Range of Number of Owners Req.	1 to 4
Drinking Water Wells	Yes
Length of Activity at Portal	2-4 Years
Site Contamination / Geologic Hazard Potential	Potential for excavation of contaminated soil is limited to surface soil
Area of Wetlands in Area	approx. 6.6
Length of Surface Streams in Area	approx. 733
Jurisdiction(s)	Mountlake Terrace, Shoreline, Edmonds

EVALUATION OF PORTAL SITES

OVERALL EVALUATION

All the candidate sites are suitable for portal construction. Sites E27-A and E27-B are located on a golf course and an unused portion of a cemetery, respectively. The major limitation with Site E27-C is the construction and maintenance access through private properties.

ENGINEERING

The three sites have land suitable for construction without slope stability issues. Both Sites E27-A and E27-B have construction and maintenance access from one direction only, while Site E27-C requires access through private properties. All sites have comparable conveyance lengths.

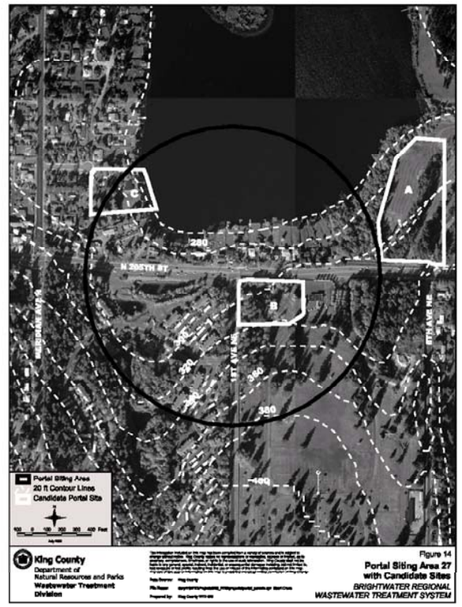
ENVIRONMENTAL / COMMUNITY

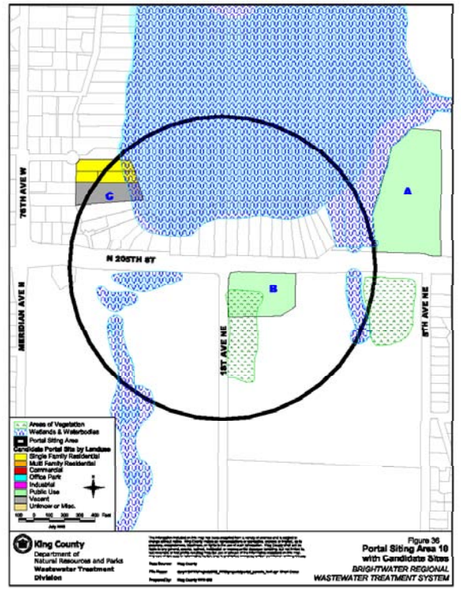
This portal siting area is centered on the southern shore of Lake Ballinger. The proposed portal sites are located on an adjacent golf course (Site E27-A), cemetery (Site E27-B), and residential properties (Site E27-C). Site E27-A includes mown grass fairways and patches of mature coniferous forest with minimal understory. Bald eagles have been observed perching in the trees and foraging in the lake. This site is separated from the lake by a forested wetland and a tributary to the lake. Site E27-B contains a mature forest with a shrub understory and an isolated scrub/shrub wetland with grass and forested buffers. Site E27-C is composed of residential properties adjacent to the lake that have emergent wetlands along the lakeshore with largely developed or mown buffers.

LAND ACQUISITION

Scarcity of vacant property without sensitive area has led to consideration of open areas associated with other uses as a way to minimize disruption, and a large lot residential area adjacent to vacant property is being considered.

PORTAL AREA AND SITES





PORTAL SITES COMPARISON

Features	Site E27-A	Site E27-B	Site E27-C
Number of Parcels - Number of Owners	1-1	1-1	4-4
Existing Land Use	Open Space General RCW 84.34	Mortuary/Cemetery/Crematory	Single Family Residence – Detached, Undeveloped (vacant) land
Adjacent Land Use (Approx. number of buildings and dwelling units w/in 400 feet)	4	43	38
Complexity of Relocation	Relative level of complexity in occupant relocations appear to be low (L)	Relative level of complexity in occupant relocations appears to be low (L)	Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate (M)
Wetland classification, characteristics, and potential impacts	Potential impact to a Category 2 forested wetland adjacent to site.	Likely impact to a Category 4, scrub/shrub wetland and forested buffer.	Impact to a Category 3, emergent wetland at the fringe of Lake Ballinger.
Forested characteristics and potential impacts	Likely impact to narrow strips of mature conifers between golf course fairways.	Likely impact to a mature coniferous forest that covers approximately half of the site.	No impacts to forest habitat.
Stream/buffer characteristics and potential impacts	Potential impact to a small stream within the forested wetland adjacent to the site.	Construction would not impact a stream or buffer.	Construction would not impact a stream or buffer.
Presence/habitat for special status species	Potential presence/habitat for many special status species associated with the adjacent wetland and Lake Ballinger. Documented presence of bald eagles in vicinity of site.	Mature forest habitat provides potential habitat for special status birds. Documented presence of bald eagles in vicinity of site.	Potential presence/habitat for many special status species associated with Lake Ballinger.
Construction/Maintenance Access	Access from one direction only (M)	Access from one direction only (M)	Access through private property or residential neighbor with small streets (H)
Distance to Tunnel Centerline	250	250	500

ROUTE 9 Effluent Conveyance - Portal E30 (228th St Alternative)

Portal Location: Intersection of 228th Street SW and 35th Ave W
Corridor Segments: Deep Tunnel Access Portal for Segment E33-E30-E26

PORTAL AREA FEATURES

Engineering	
Portal Diameter	50 feet
Purpose	TBM Launch/Receive
Minimum Depth	50 feet
Maximum Depth	355 feet
Candidate Site Size	2.0-4.9 acres
Portal Excavated Volume	5,000-32,000 CY
Tunnel Spoils Volume From Portal	39,000 CY
Depth to Groundwater	10 feet
Dewatering Flow Rate	Medium-High
Nearest Power Substation	Mountlake, Brier
King County Trunk Connection	No
Local System Connection	No
Environmental / Community	
Archaeological Site Probability	High – medium
Range of Number of Parcels Req.	2 to 4
Range of Number of Owners Req.	2 to 3
Drinking Water Wells	No
Length of Activity at Portal	2-4 years
Site Contamination / Geologic Hazard Potential	No potential for contamination identified.
Acres of Wetlands	2.67
Linear Feet of Streams	1,113
Jurisdiction(s)	BRIER

EVALUATION OF PORTAL SITES

OVERALL EVALUATION

All the candidate sites are suitable for portal construction. The sites meet engineering requirements. The sites have the potential to affect wetland and/or wetland buffers, with Site E30-C likely to impact a significant wetland area associated with Lyon Creek. Sites E30-A and E30-C have the potential to adversely affect Lyon Creek and/or its buffer and associated special status species habitat.

ENGINEERING

All three sites have land suitable for construction without any slope stability issues. Site E30-B has the advantage of the shortest conveyance length. In terms of access for construction and maintenance, both Sites 30E-B and 30E-C have access from one direction only, while site A requires access through private properties.

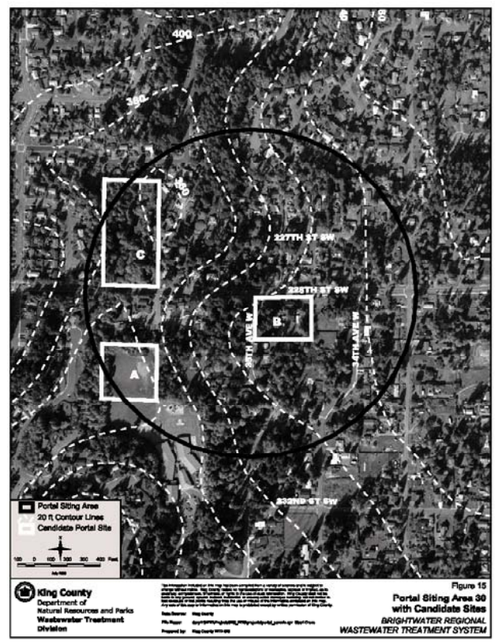
ENVIRONMENTAL / COMMUNITY

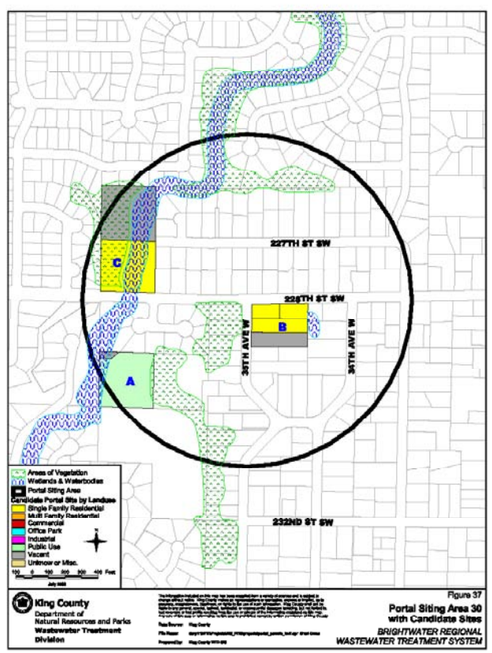
All three sites are located within a largely developed single-family residential area in the City of Brier. Sites E30-B and E-30C are within close proximity to Brier Elementary School, while Site E-30A is located on an open-field area associated with the school. Site E30-C has the highest density of adjacent residences. All three sites have the potential to affect wetland and/or wetland buffers, with Site E30-C likely to have a significant impact to wetland area associated with Lyon Creek. Sites E30-A and E30-C have the potential to adversely affect Lyon Creek and/or its buffer and associated special status species habitat. Site E30-C contains a mature forested area dominated by Douglas fir.

LAND ACQUISITION

Vacant property without sensitive area exclusions is insufficient for construction. Therefore, other uses are being considered and evaluated.

PORTAL AREA AND SITES





PORTAL SITES COMPARISON

Features	Site E30-A	Site E30-B	Site E30-C
Number of Parcels - Number of Owners	2-2 1 Easement Estimated	4-3	2-2
Existing Land Use	Playfield area associated with Brier Elementary School.	Single family residential	Undeveloped/vacant land; Single family residential.
Adjacent Land Use (Approx. number of buildings and dwelling units w/in 400 feet)	31	51	89
Complexity of Relocation	Relative level of complexity in occupant relocations appears to be low (L)	Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate. (M)	Relative level of complexity in occupant relocations appears to be low. (L)
Wetland classification, characteristics, and potential impacts	Construction may impact a Category 2 or 3 wetland or buffer associated with Lyon Creek; dewatering impacts of concern.	Construction may temporarily impact a Catergory 3 or 4 wetland or buffer, if present on or near the site. Potential dewatering impacts to wetland during construction.	A palustrine forested Category 1 or 2 wetland occupies a large portion of the site. Impacts are likely; dewatering of concern.
Forested characteristics and potential impacts	No forested area is present on the site; however, riparian forest is located immediately west of the site.	No forested area is present, only landscape trees.	A mature Douglas fir dominated forested area occupies a major portion of the site.
Stream/buffer characteristics and potential impacts	Construction could temporarily affect the water quality of Lyon Creek; however, buffer habitat on the site is limited to a grassy playing field. Potential dewatering impacts are a concern.	Construction would not impact a stream or stream buffer.	Lyon Creek and its mature forested buffer is likely to be impacted by construction because it is the central feature of this site extending from south to north across most of the site. Dewatering impacts are a concern.
Presence/habitat for special status species	Impacts to habitat areas for special status species are expected to be low because Lyon Creek buffer habitat is already disturbed on this site.	There is no documented presence or habitat for special status species.	Potential impacts to habitat areas for special status species are expected to be high because most of the site consists of mature forest and wetland habitats associated with Lyon Creek.
Construction/Maintenance Access	Access through private property or residential neighbor with small streets. (H)	Access from one direction only. (M)	Access from one direction only (M)
Distance to Tunnel Centerline	680	200	350

ROUTE 9 Effluent Conveyance - Portal E33 (228th St Alternative)

Portal Location: Intersection of 228th Street SW and Locust Way
Corridor Segments: Deep Tunnel Access Portal for Segment E37-E33-E30

PORTAL AREA FEATURES

Engineering	
Portal Diameter	50 feet
Purpose	TBM Launch/Receive
Portal Depth	100 feet
Candidate Site Size	2.7-3.0 acres
Portal Excavated Volume	10, 000 CY
Tunnel Spoils Volume From Portal	135,000 CY
Depth to Groundwater	5 feet
Dewatering Flow Rate	1 to 250 gpm
Nearest Power Substation	Brier
King County Trunk Connection	No
Local System Connection	No
Environmental / Community	
Archaeological Site Probability	High
Range of Number of Parcels Req.	1
Range of Number of Owners Req.	1
Drinking Water Wells	No
Length of Activity at Portal	3.5 Years
Site Contamination / Geologic Hazard Potential	Potential for excavation of contaminated soil is limited to surface soil
Acres of Wetlands	7.39
Linear Feet of Streams	3,145
Jurisdiction(s)	BRIER, Snohomish County

EVALUATION OF PORTAL SITES

OVERALL EVALUATION

All of the candidate sites are suitable for portal construction. No significant geotechnical constraints were identified. Due to proximity of Swamp Creek, construction at Sites E33-C and E33-D has the potential to adversely affect the stream buffer and associated wetlands and special status species habitat. Potential for wetland/stream dewatering will be of concern for all sites.
Sites E33-B and E33-C provide adequate access for maintenance and construction from both directions, and Site E33-A requires access through private property and a residential neighborhood.

ENGINEERING

Geotechnical features of all three sites are favorable to construction as they are on flat land posing no landslide potential. The sites have comparable conveyance lengths.

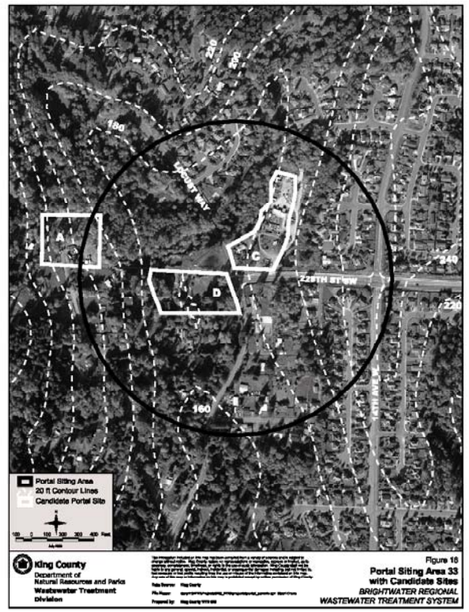
ENVIRONMENTAL / COMMUNITY

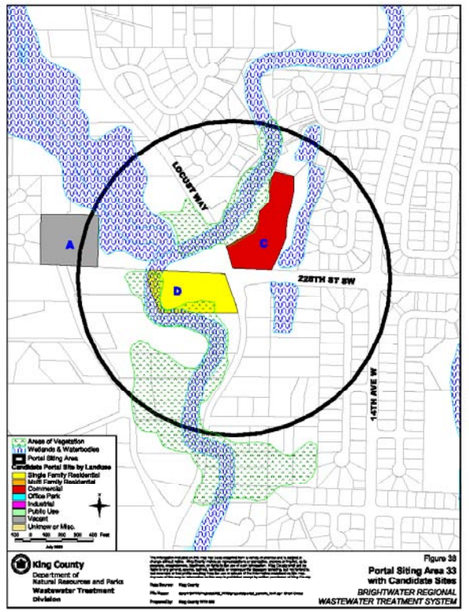
This portal area is largely developed and entirely occupied by single-family residences. Sites E33-A and E33-D, located within the City of Brier, are occupied by single-family residences. Site E33-C, located in unincorporated Snohomish County, is currently undeveloped but is the proposed site for 11 duplex units. Swamp Creek flows within 100 feet of the Site E33-C west boundary and along the west boundary of Site E33-D. Construction at either site has the potential to adversely affect the stream buffer and associated wetlands and special status species habitat. Site E33-A contains forested and potential wetland habitat that may be associated with Swamp Creek in the northeast corner of the site. Potential for wetland/stream dewatering will be of concern for all sites.

LAND ACQUISITION

Large lots with area projected to minimize disruption are being considered due to scarcity of vacant land without sensitive features.

PORTAL AREA AND SITES





PORTAL SITES COMPARISON

Features	Site E33-A	Site E33-C	Site E33-D
Number of Parcels - Number of Owners	1-1	1-1	1-1
Existing Land Use	Single family residential	Undeveloped, machinery and automobile storage area.	Single family residential.
Adjacent Land Use (Approx. number of buildings and dwelling units w/in 400 feet)	19	75	15
Complexity of Relocation	Relative level of complexity in occupant relocations appears to be low. (L)	Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate. (M)	Relative level of complexity in occupant relocations appear to be low (L)
Wetland classification, characteristics, and potential impacts	A Category 2 or 3 forested wetland may exist on the northeast portion of the site; however, this requires confirmation. This habitat may be affected by construction, including potential for dewatering impacts.	Wetlands (Category 1, 2, and/or3) located immediately east and west of the site may be affected by construction. Dewatering potential is of concern.	A Class 1 or 2 wetland, if present along Swamp Creek, may be affected by construction; dewatering impacts are a concern.
Forested characteristics and potential impacts	Forested habitat exists on the northeast portion of the site.	No forested area is present on the site; however, riparian and wetland forest areas border the site to the east and west.	Scattered trees including Douglas fir, red alder, and black cottonwood are located on the east portion of the site.
Stream/buffer characteristics and potential impacts	Construction is likely to impact a Swamp Creek tributary and/or forested stream buffer, either by affecting water quality and/or the forested buffer. Potential dewatering impacts will be a concern.	Construction may temporarily affect the water quality of Swamp Creek due to the close proximity of this stream to the site (within 100 feet in places).	Swamp Creek is located near the west site boundary and may be impacted by construction; buffer vegetation appears to be limited on the site.
Presence/habitat for special status species	Impacts to habitat areas for special status priority species may occur because a Swamp Creek tributary is located within 150 feet of the site and associated forest habitat is located on the northeast portion of the site.	Impacts to habitat areas for special status priority species are expected to be low due to the developed nature of the site.	Impacts to habitat areas for special status priority species may occur because Swamp Creek is located on the site.
Construction/Maintenance Access	Access through private property or residential neighbor with small streets. (H)	Access from both directions. (L)	Access from both directions. (L)
Distance to Tunnel Centerline	180	250	0

Route9 Influent Conveyance - Portal I34

Portal Location: Intersection of NE Bothell Way (SR-522) and 80th Ave NE
Corridor Segments: Tunnel Access Portal for Segment I13-I12-I11

PORTAL AREA FEATURES

Engineering	
Portal Diameter	50 feet
Purpose	TBM Launch/Receive
Minimum Depth	40 feet
Maximum Depth	60 feet
Candidate Site Size	2.1-7.2 acres
Portal Excavated Volume	3,650 – 5,500 CY
Tunnel Spoils Volume From Portal	28,000 CY
Depth to Groundwater	2 feet
Dewatering Volume for Disposal	Low
Nearest Power Substation	Kenmore, Wayne, Inglewood
King County Trunk Connection	No
Local System Connection	No
Environmental / Community	
Archaeological Site Probability	High
Range of Number of Parcels Req.	4
Range of Number of Owners Req.	3 to 4
Drinking Water Wells	No
Length of Activity at Portal	2-4 years
Site Contamination / Geologic Hazard Potential	No potential for contamination identified. Small area has erosion hazard
Area of Wetlands in Area	approx. 9.7
Length of Surface Streams in Area	approx. 509
Jurisdiction(s)	Kenmore

EVALUATION OF PORTAL SITES

OVERALL EVALUATION

Both Site I34-A and I34-F are suitable for portal construction, and no major engineering constraints were identified. Site I34-A is located on low-density residential properties that are within the buffer of a large wetland associated with Swamp Creek and the Sammamish River. Site I34-F is a paved and built commercial property adjacent to Swamp Creek and its buffer. Site I34-F has a shorter conveyance length but has access from one direction only.

ENGINEERING

Both sites meet general engineering requirements and pose no geotechnical constraints such as landslide or slope stability issues. Site I34-A has access for construction and maintenance from both directions, while Site I34-F has access from only one direction. SiteI34-F has a shorter conveyance length.

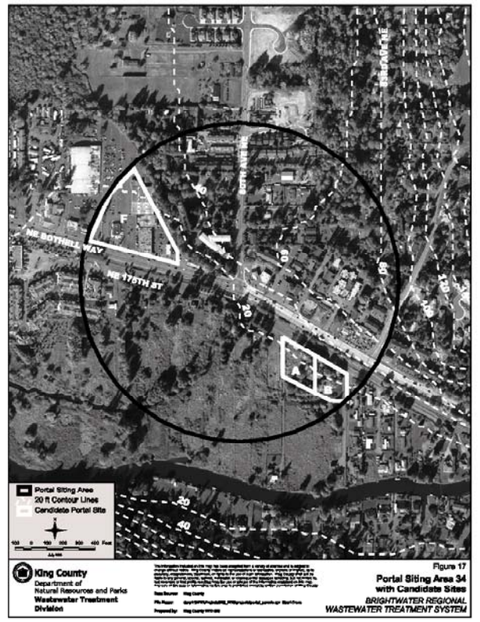
ENVIRONMENTAL / COMMUNITY

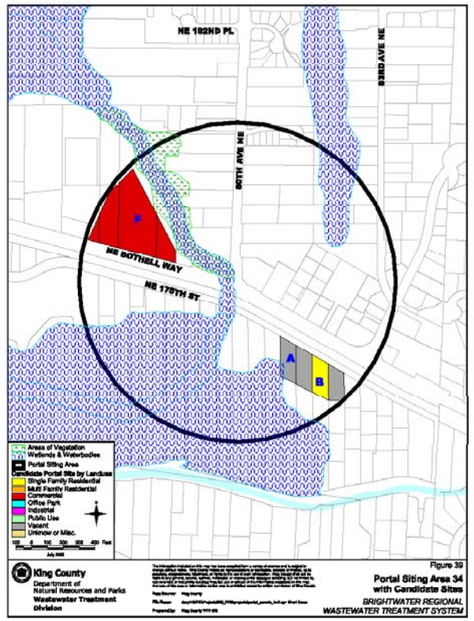
This portal siting area is located near the confluence of Swamp Creek and the Sammamish River. Land use varies from dense development to undeveloped natural areas. Site I34-A is located on low-density residential properties that are within the buffer of a large wetland associated with Swamp Creek and the Sammamish River. Site I34-F is a paved and built commercial property adjacent to Swamp Creek and its buffer.

LAND ACQUISITION

Sensitive areas on vacant parcels have reduced available undeveloped property and led to the consideration of other uses.

PORTAL AREA AND SITES





PORTAL SITES COMPARISON

Features	Site I34-A	Site I34-F
Number of Parcels - Number of Owners	4-4	4-3
Existing Land Use	Single Family (Res. Use/Zone) Vacant (Single-family)	Shopping Center, Parking (assoc.), Retail stores
Adjacent Land Use (Approx. number of buildings and dwelling units w/in 400 feet)	123	86
Complexity of Relocation	Relative level of complexity in occupant relocations appear to be low (L)	Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate (M)
Wetland classification, characteristics, and potential impacts	Likely impact to a Category 3 wetland and associated buffer containing dominant reed canary grass.	No impact to wetlands or buffers.
Forested characteristics and potential impacts	No impact to forest habitat.	No impact to forest habitat.
Stream/buffer characteristics and potential impacts	Construction would not impact a stream or stream buffer.	Construction could impact Swamp Creek and its buffer located directly adjacent to the site.
Presence/habitat for special status species	Suitable habitat for great blue herons. Documented presence of bald eagles in the vicinity of the site.	No suitable habitat for special status species on the site. Documented coho and chinook salmon within Swamp Creek.
Construction/Maintenance Access	Access from both directions (L)	Access from one direction only (M)
Distance to Tunnel Centerline	500	100

ROUTE 9 Effluent Conveyance - Portal E37 (228th St Alternative)

Portal Location: Intersection of 228th Street SE and 9th Ave SE
Corridor Segments: Deep Tunnel Access Portal for Segment E39-E37-E30

PORTAL AREA FEATURES

Engineering	
Portal Diameter	50 feet
Purpose	TBM Launch/Receive
Minimum Depth	50 feet
Maximum Depth	150 feet
Candidate Site Size	1.68 -4.5 acres
Portal Excavated Volume	8,000 – 14,000 CY
Tunnel Spoils Volume From Portal	45,000 CY
Depth to Groundwater	10 feet
Dewatering Flow Rate	Low – Medium
Nearest Power Substation	Canyon Park
King County Trunk Connection	No
Local System Connection	No
Environmental / Community	
Archaeological Site Probability	High
Range of Number of Parcels Req.	1 to 3
Range of Number of Owners Req.	1 to 2
Drinking Water Wells	No
Length of Activity at Portal	2-4 Years
Site Contamination / Geologic Hazard Potential	Potential for excavation of contaminated soils is limited to surface soil
Acres of Wetlands	6.5
Linear Feet of Streams	2,238
Jurisdiction(s)	Bothell

EVALUATION OF PORTAL SITES

OVERALL EVALUATION

All the candidate sites are suitable for portal construction and meet engineering requirements. The sites are located in a developed area of Bothell surrounded by residential and commercial development. Sites E37-C and E37-D contain immature upland forested areas. Site E37-D also has the potential to impact a North Creek tributary buffer located near the east boundary of the site. Special status species may also be affected at Site E37-D.

ENGINEERING

Geotechnical features of all three sites are favorable to construction as they are on flat land posing no landslide potential. Both Sites E37-C and E37-D provide adequate access for maintenance and construction from both direction, while Site E37-A has access from one direction only. Site E37-C has the shorter conveyance length; whereas both Site E37-A and E37-D have comparable medium length conveyance distance to the tunnel centerline.

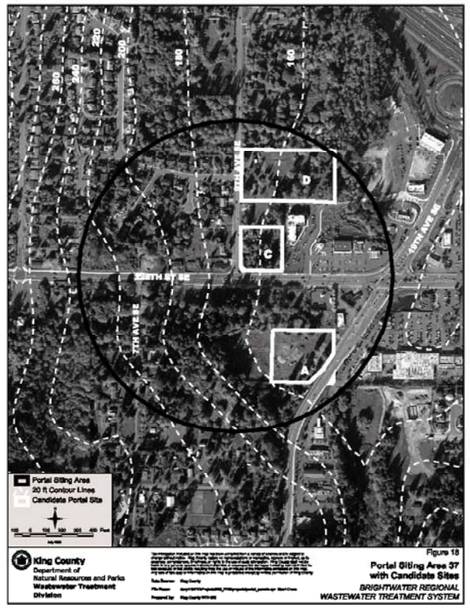
ENVIRONMENTAL / COMMUNITY

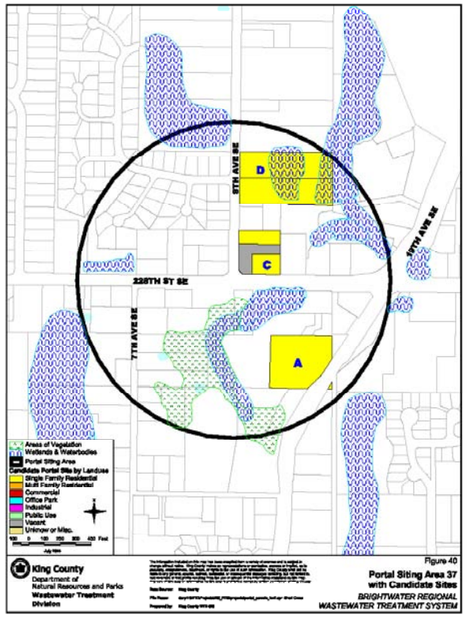
The three sites within portal area 37 are located in a developed area of Bothell surrounded by residential and commercial development. However, each of the three sites is surrounded by relatively low-density development. All of the sites may potentially affect wetland areas and Sites E37-C and E37-D contain immature upland forested areas. Site E37-D also has the potential to impact a North Creek tributary buffer located near the east boundary of the site. Special status, fish species may also be affected at Site E37-D.

LAND ACQUISITION

Sensitive areas occupy much of the vacant property so other open and less densely developed areas are being investigated.

PORTAL AREA AND SITES





PORTAL SITES COMPARISON

Features	Site E37-A	Site E37-C	Site E37-D
Number of Parcels - Number of Owners	1-1	3-2	2-2
Existing Land Use	Single Family Residential, undeveloped/vacant land.	Single Family Residence – Detached, Undeveloped (vacant) land – Commercial Use	Single Family Residential
Adjacent Land Use (Approx. number of buildings and dwelling units w/in 400 feet)	11	21	27
Complexity of Relocation	Relative level of complexity in occupant relocations appears to be low (L)	Relocations are likely to be complex and disruptive, but occupants appear to be reasonably able to relocate (M)	Relative level of complexity in occupant relocations appears to be low (L)
Wetland classification, characteristics, and potential impacts	Construction may impact a Class 2 or 3 wetland or buffer, if present on the site.	A small (less than 1 acre) potential Class 3 wetland may be located on the site and may be affected by construction.	Construction may impact a Class 2 or 3 wetland or buffer, if present on the site.
Forested characteristics and potential impacts	No forested area is present, only scattered trees.	An immature, alder-dominated forested area is present on the southwestern portion of the site.	An immature red alder, Douglas fir and western red cedar forest is present on the east portion of the site.
Stream/buffer characteristics and potential impacts	Construction should not impact an off-site stream or stream buffer; however, potential for dewatering impacts would need to be evaluated.	Construction should not impact an off-site stream or stream buffer (Perry Creek tributary), piped beneath the adjacent site to the east; potential for dewatering needs to be evaluated.	It is likely that construction would impact a North Creek tributary or its buffer located on or near the east portion of the site. Potential for dewatering impacts is a concern.
Presence/habitat for special status species	There is no documented presence or habitat for special status species.	There is no documented presence or habitat for special status species.	Special status species habitat may be affected by construction on the east portion of the site. (Salmonids)
Construction/Maintenance Access	Access from one direction only. (M)	Access from both directions. (L)	Access from both directions. (L)
Distance to Tunnel Centerline	500	180	500

ROUTE 9 Effluent Conveyance - Portal E39 (228th St Alternative)

Portal Location: Intersection of 228th Street SE and 31st Ave SE
Corridor Segments: Deep Tunnel Access Portal for Segment Route 9 to E39-E37

PORTAL AREA FEATURES

Engineering	
Portal Diameter	50 feet
Purpose	TBM Launch/Receive
Portal Depth	110 feet
Candidate Site Size	2.2-2.9 acres
Portal Excavated Volume	11,000 CY
Tunnel Spoils Volume From Portal	123,000 CY
Depth to Groundwater	15 feet
Dewatering Volume for Disposal	1-250 gpm
Nearest Power Substation	Parkridge
King County Trunk Connection	No
Local System Connection	No
Environmental / Community	
Archaeological Site Probability	High
Range of Number of Parcels Req.	1 to 2
Range of Number of Owners Req.	1 to 2
Drinking Water Wells	No
Length of Activity at Portal	3.0 Years
Site Contamination / Geologic Hazard Potential	Potential for excavation of contaminated soils is limited to surface soil
Acres of Wetlands	0.29
Linear Feet of Streams	2,178
Jurisdiction(s)	Bothell

EVALUATION OF PORTAL SITES

OVERALL EVALUATION

The candidate sites meet the general engineering requirements and have favorable geotechnical conditions for portal construction. The sites are comprised of a mix of single-family residential and undeveloped/vacant land uses. Sites E39-B and E39-C may fall within the Palm Creek stream buffer; and construction may adversely affect adjacent wetlands or stream buffers if present on these sites. Both sites are partially occupied by immature upland forest. Construction and maintenance access to Sites E39-D and E39-C would require access through private properties.

ENGINEERING

Geotechnical features of the sites are favorable to construction without major slope stability issues. Access for construction and maintenance has been identified as one of the major limitations with Sites E39-C and E39-D because private properties and residential neighborhoods with small streets would have to be used. Site E39-B has the advantage of slightly lower conveyance length than the other two sites.

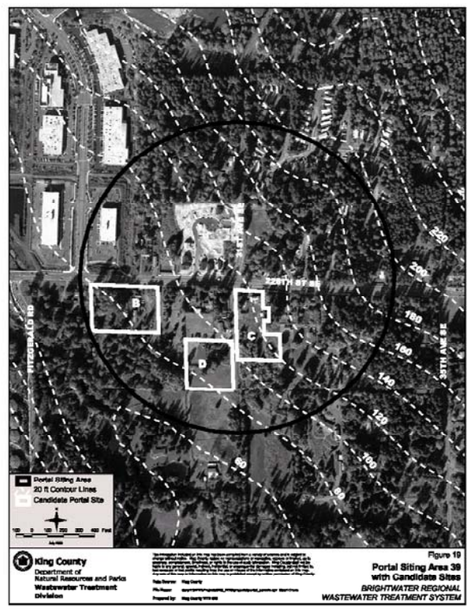
ENVIRONMENTAL / COMMUNITY

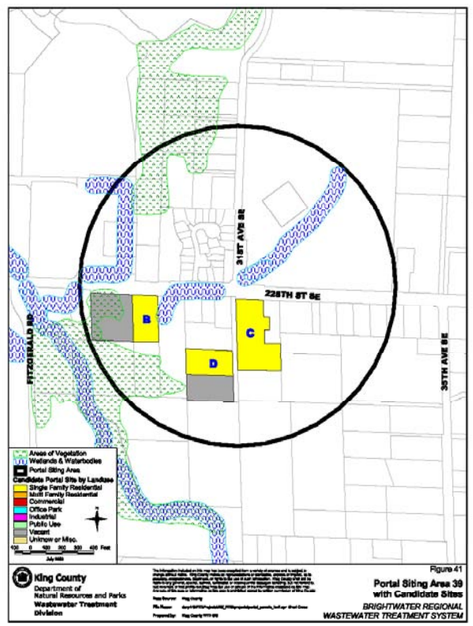
Located within the City of Bothell, the sites are composed of a mix of single-family residential and undeveloped/vacant land uses. The sites are surrounded by low-density development. Because site access to site E39-D is limited, not much is known in terms of wetland or stream presence on this site. Sites E39-B and E39-C may fall within the Palm Creek stream buffer and site E39-B is located approximately 200 feet east to North Creek. Construction may adversely affect wetlands or stream buffers, if present on these sites. Site E39-B are partially occupied by immature upland forest. Special status salmanid species habitat (forest buffer) is located on site E39-B and adjacent to E39-C

LAND ACQUISITION

Sensitive areas occupy much of the vacant property so other open and less densely developed areas are being investigated.

PORTAL AREA AND SITES





PORTAL SITES COMPARISON

Features	Site E39-B	Site E39-C	Site E39-D
Number of Parcels - Number of Owners	2-2	1-1	2- 2
Existing Land Use	Single Family Residential, undeveloped/vacant land	Single Family Residential, undeveloped/vacant land.	Undeveloped/vacant land, Single Family Residential
Adjacent Land Use (Approx. number of buildings and dwelling units w/in 400 feet)	13	20	12
Complexity of Relocation	Relative level of complexity in occupant relocations appears to be low (L)	Relative level of complexity in occupant relocations appears to be low (L)	Relative level of complexity in occupant relocations appears to be low (L)
Wetland classification, characteristics, and potential impacts	Construction may impact a Class 3 or 4 wetland or buffer, if present	Construction may impact a Class 3 or 4 wetland or buffer, if present.	Unknown due to limited site access. Construction may impact a Class 3 or 4 wetland or buffer, if present.
Forested characteristics and potential impacts	An immature alder and cottonwood dominated forested area is located along the western portion of the site.	Only scattered trees present.	Only scattered trees present.
Stream/buffer characteristics and potential impacts	Palm Creek is located immediately west of the site, and North Creek is located approx. 200 feet SW of the site. Potential for forest buffer dewatering impacts would need to be evaluated.	Palm Creek is located immediately east of or on the site, potential buffer and dewatering impacts would need to be evaluated.	Unknown due to limited site access. Construction may affect a stream or stream buffer, if present on the site; however, none are apparent on the aerial photo.
Presence/habitat for special status species	Forested buffer for salmonid streams (North Creek and Palm Creek) may be affected and dewatering is a concern.	Dewatering to salmonid stream is a concern.	There is no documented presence or habitat for special status species unless a stream is located on or near the site.
Construction/Maintenance Access	Access from one direction only. (M)	Access through private property or residential neighborhood with small streets. (H)	Access through private property or residential neighborhood with small streets (H)
Distance to Tunnel Centerline	250	500	500

ROUTE 9 (Influent and Effluent) Conveyance - Portal 41 (195th St and 228th St Alternative)

Portal Location: Intersection of NE 195th Street and 120th Ave NE in Bothell
Corridor Segments: Deep Tunnel Access Portal for Segment E41-E44

PORTAL AREA FEATURES

Engineering	
Portal Diameter	50 feet
Purpose	TBM Launch/Receive
Portal Depth	90 feet
Candidate Site Size	3.0-16.1 acres
Portal Excavated Volume	9,000 CY
Tunnel Spoils Volume From Portal	277,000 CY
Depth to Groundwater	5 feet
Dewatering Flow Rate	20 – 250 gpm
Nearest Power Substation	Vitulli
King County Trunk Connection	Yes – North Creek
Local System Connection	No
Environmental / Community	
Archaeological Site Probability	High
Range of Number of Parcels Req.	1 to 3
Range of Number of Owners Req.	1
Drinking Water Wells	No
Length of Activity at Portal	3 Years
Site Contamination / Geologic Hazard Potential	No potential for contamination identified
Area of Wetlands in Area (acres)	approx. 6
Length of Surface Streams in Area (feet)	approx. 1,126
Jurisdiction(s)	Bothell

EVALUATION OF PORTAL SITES

OVERALL EVALUATION

The candidate sites are suitable for portal construction. No major geotechnical constraints were identified. All candidate sites are located in the North Creek Business Park commercial area, and land acquisition for the three sites is considered relatively uncomplicated. Site 41-A is near North Creek and is separated from the stream and associated wetlands by a dike and pedestrian trail. Site 41-C is adjacent to a large patch of forest located along the hill slopes above the stream valley. Site 41-D is adjacent to a tributary of the Sammamish River, which has a mown buffer in this area.

ENGINEERING

Geotechnical features of the sites can be considered favorable to construction because they are on flat land posing no landslide potential. Site 41-A, 41-C and 41-X provide adequate access for maintenance and construction from both directions. Site 41-D has access from one direction only. Site 41-X and Site 41-D require greater conveyance length.

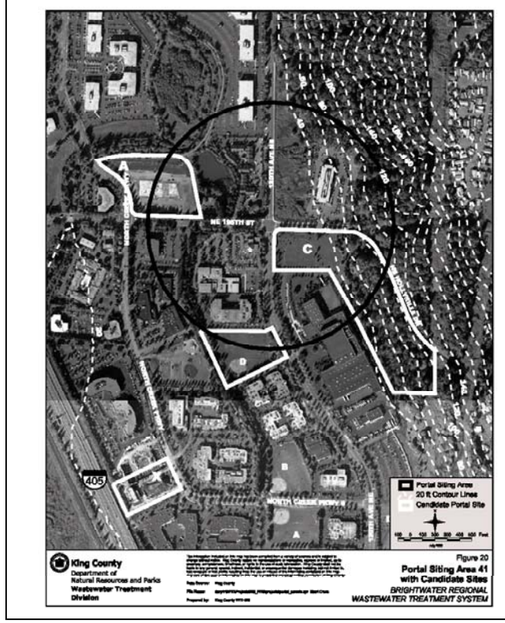
ENVIRONMENTAL / COMMUNITY

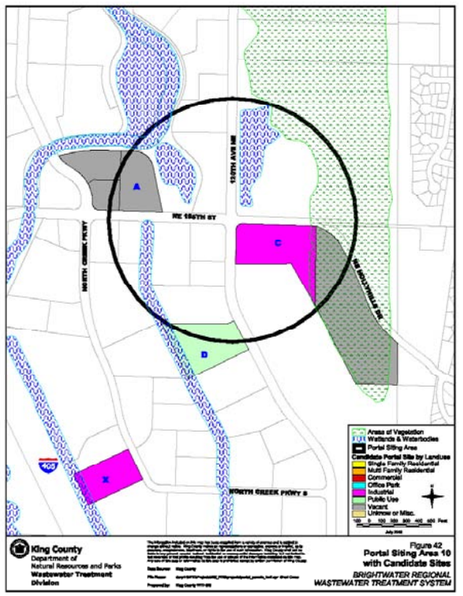
These sites are located in the North Creek Business Park commercial area. Site 41-A is developed as a building site, and Sites 41-C and 41-D are developed as mown fields. Site 41-A is near North Creek and is separated from the stream and associated wetlands by a dike and pedestrian trail. Site 41-C is adjacent to a large patch of forest located along the hill slopes above the stream valley. Site 41-D is adjacent to a tributary of the Sammamish River, which has a mown buffer in this area. Site 41-X is an existing pump station site with no jurisdictional wetlands or streams on or adjacent to the site.

LAND ACQUISITION

Vacant property, transition areas and open space are being evaluated along with developed properties in the area. Level of development and sensitive area considerations have led to a broad search for suitable sites.

PORTAL AREA AND SITES





PORTAL SITES COMPARISON

Features	Site E41-A	Site 41-C	Site 41-D	Site 41-X
Number of Parcels - Number of Owners	3-1	1-1	1-1	1-1
Existing Land Use	Vacant (Industrial)	Industrial (heavy)	Vacant (Industrial)	Industrial
Adjacent Land Use (Approx. number of buildings and dwelling units w/in 400 feet)	87	24	15	10
Complexity of Relocation	Relative level of complexity in occupant relocations appear to be low (L)	Relative level of complexity in occupant relocations appears to be low (L)	Relative level of complexity in occupant relocations appears to be low (L)	Relative level of complexity in occupant relocations appear to be low (L)
Wetland classification, characteristics, and potential impacts	No impact to wetlands or buffers.	No impact to wetlands or buffers.	No impact to wetlands or buffers.	No impact to wetlands or buffers.
Forested characteristics and potential impacts	No impact to forest habitat.	No impact to forest habitat.	No impact to forest habitat.	No impact to forest habitat.
Stream/buffer characteristics and potential impacts	Unlikely to impact North Creek because a high dike separates site from stream.	Construction would not impact a stream or buffer.	Potential impact to a Sammamish River tributary. No impact to buffer (buffer is a mowed ballfield).	Construction would not impact a stream or buffer.
Presence/habitat for special status species	Potential presence/habitat for many special status species associated with North Creek/wetland complex located north of the site.	Mature forest habitat adjacent to site provides suitable habitat for special status birds such as pileated woodpecker and Vaux's swift.	Sammamish River tributary provides suitable rearing habitat for coho salmon.	There is no documented presence or habitat for special status species.
Construction/Maintenance Access	Access from both directions (L)	Access from both directions (L)	Access from one direction only (M)	Access from both directions (L)
Distance to Tunnel Centerline	250	200	1000	2000

ROUTE 9 Influent & Effluent Conveyance - Portal 44 (195th St Alternative)

Portal Location: Intersection of NE 195th Street and 80th Ave NE in the city of Kenmore
Corridor Segments: Tunnel Access Portal for Segment E41-E44-E45

PORTAL AREA FEATURES

Engineering	
Portal Diameter	50 feet
Purpose	TBM Launch/Receive
Portal Depth	80 feet
Candidate Site Size	2.3-8.8 acres
Portal Excavated Volume	8,000 CY
Tunnel Spoils Volume From Portal	438,000 CY
Depth to Groundwater	5 feet
Dewatering Flow Rate	1 to 250 gpm
Nearest Power Substation	Kenmore, North Bothell
King County Trunk Connection	No
Local System Connection	No
Environmental / Community	
Archaeological Site Probability	High
Range of Number of Parcels Req.	1 to 2
Range of Number of Owners Req.	1
Drinking Water Wells	No
Length of Activity at Portal	4.0 Years
Site Contamination / Geologic Hazard Potential	Potential for excavation of contaminated soil is limited to surface soil
Area of Wetlands in Area (acres)	approx. 20
Length of Surface Streams in Area (feet)	approx. 3,432
Jurisdiction(s)	Kenmore

EVALUATION OF PORTAL SITES

OVERALL EVALUATION

All the candidate sites are suitable for portal construction. The sites meet engineering requirements. Site 44-C is a largely undeveloped, shrub-dominated site with scattered deciduous trees. Construction at Sites 44-C and 44-D could impact a tributary of Little Swamp Creek that flows along the sites. Access is considered a major constraint for construction at Site 44-C.

ENGINEERING

The sites have land suitable for construction without any slope stability issues. Both Sites 44-D and 44-E have comparable conveyance length. Both Sites 44-D and 44-E have access for construction and maintenance from one direction only. Site 44-C requires access through private properties.

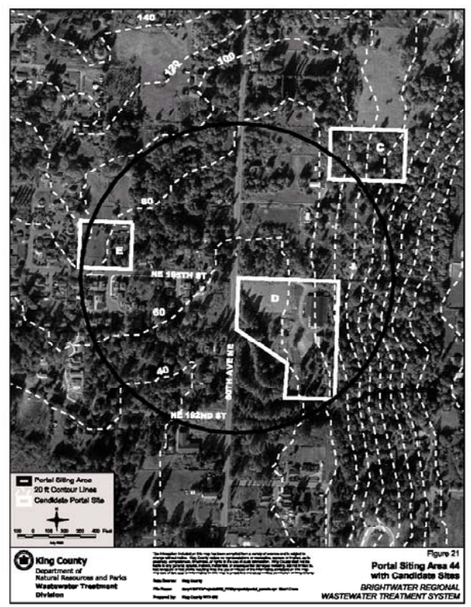
ENVIRONMENTAL / COMMUNITY

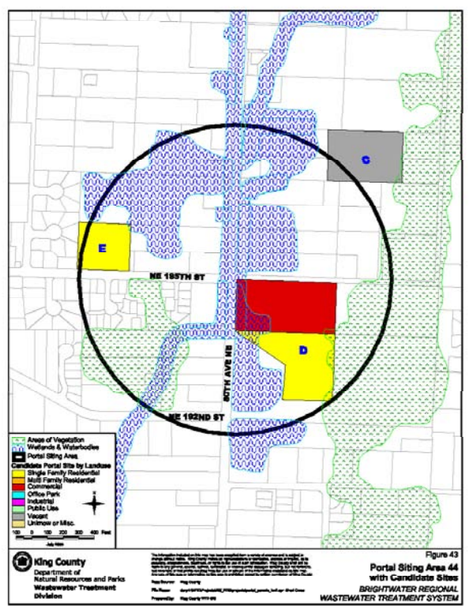
These sites are located within a shallow valley containing extensive wetland areas and streams including Little Swamp Creek. Site 44-C is a largely undeveloped, shrub-dominated site with scattered deciduous trees. It is located between an extensive wetland that contains two tributaries of Little Swamp Creek and a large mixed forest located on the hillside above the valley. Site 44-D consists of a horse boarding and training facility with minimal vegetative cover. Portions of emergent and forested wetlands extend onto the site. This site is also adjacent to the large forest discussed above. Site 44-E is located on an open, grassy field adjacent to a large wetland.

LAND ACQUISITION

Sensitive areas occupy much of the vacant property. Therefore, other open and less densely developed areas are being investigated.

PORTAL AREA AND SITES





PORTAL SITES COMPARISON

Features	Site 44-C	Site 44-D	Site 44-E
Number of Parcels - Number of Owners	1-1	2-1	1-1
Existing Land Use	Vacant (Single-family)	Farm, Single Family (Res. Use/Zone)	Single Family (Res. Use/Zone)
Adjacent Land Use (Approx. number of buildings and dwelling units w/in 400 feet)	8	14	51
Complexity of Relocation	Relative level of complexity in occupant relocations appear to be low (L)	Relative level of complexity in occupant relocations appear to be low (L)	Relative level of complexity in occupant relocations appears to be low (L)
Wetland classification, characteristics, and potential impacts	Potential impact to a small portion of a Category 3 wetland. Likely Impact to a shrub buffer.	Impact to a forested and emergent Category 3 wetland. Existing buffer is horse pasture.	Emergent Category 2 wetland located directly north of site. Impacts to degraded, grass-dominated wetland buffer on site.
Forested characteristics and potential impacts	No impact to forest habitat. Adjacent to large, mature forest.	No forest on site. Adjacent to large, mature forest.	None
Stream/buffer characteristics and potential impacts	Construction could impact a potential stream on the site that is tributary to Little Swamp Creek.	Construction could impact a tributary to Little Swamp Creek and wetland buffer at the northwest corner of the site.	Construction would not impact a stream or buffer.
Presence/habitat for special status species	There is no documented presence or potential habitat for special status species on the site.	Potential presence/habitat for special status species associated with Little Swamp Creek and surrounding wetlands including coho salmon and great blue heron.	There is no documented presence or potential habitat for special status species on the site or directly adjacent. Potential presence/habitat for special status species near the site within nearby Little Swamp Creek and surrounding wetlands (see Site E44-D).
Construction/Maintenance Access	Access through private property or residential neighbor with small streets (H)	Access from one direction only (M)	Access from one direction only (M)
Distance to Tunnel Centerline	800	250	200

ROUTE 9 Influent Conveyance - Portal I44 (228th St Alternative)

Portal Location: Intersection of NE 195th Street and 80th Ave NE in the city of Kenmore
Corridor Segments: Tunnel Access Portal for Segment E41-E44-E45

PORTAL AREA FEATURES

Engineering	
Portal Diameter	50 feet
Purpose	TBM Launch/Receive
Portal Depth	90 feet
Candidate Site Size	2.3-8.8 acres
Portal Excavated Volume	9,000 CY
Tunnel Spoils Volume From Portal	96,000 CY
Depth to Groundwater	5 feet
Dewatering Flow Rate	1 to 250 gpm
Nearest Power Substation	Kenmore, North Bothell
King County Trunk Connection	No
Local System Connection	No
Environmental / Community	
Archaeological Site Probability	High
Range of Number of Parcels Req.	1 to 2
Range of Number of Owners Req.	1
Drinking Water Wells	No
Length of Activity at Portal	3.0 Years
Site Contamination / Geologic Hazard Potential	Potential for excavation of contaminated soil is limited to surface soil
Area of Wetlands in Area (acres)	approx. 20
Length of Surface Streams in Area (feet)	approx. 3,432
Jurisdiction(s)	Kenmore

EVALUATION OF PORTAL SITES

OVERALL EVALUATION

All the candidate sites are suitable for portal construction. The sites meet engineering requirements. Site I44-C is a largely undeveloped, shrub-dominated site with scattered deciduous trees. Construction at Sites I44-C and I 44-D could impact a tributary of Little Swamp Creek that flows along the sites. Access is considered a major constraint for construction at Site I 44-C.

ENGINEERING

The sites have land suitable for construction without any slope stability issues. Both Sites I44-D and I 44-E have comparable conveyance length. Both Sites I44-D and I44-E have access for construction and maintenance from one direction only. Site I 44-C requires access through private properties.

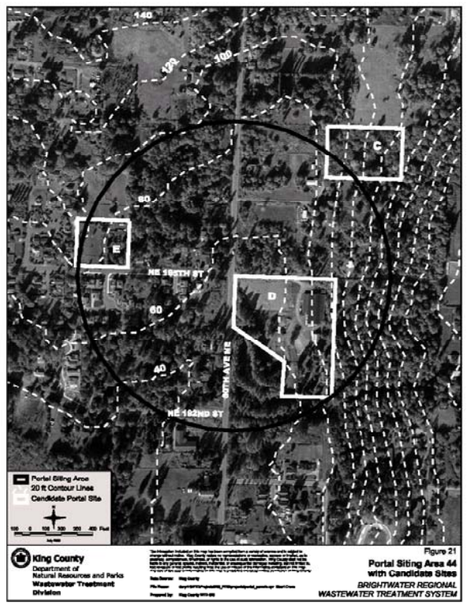
ENVIRONMENTAL / COMMUNITY

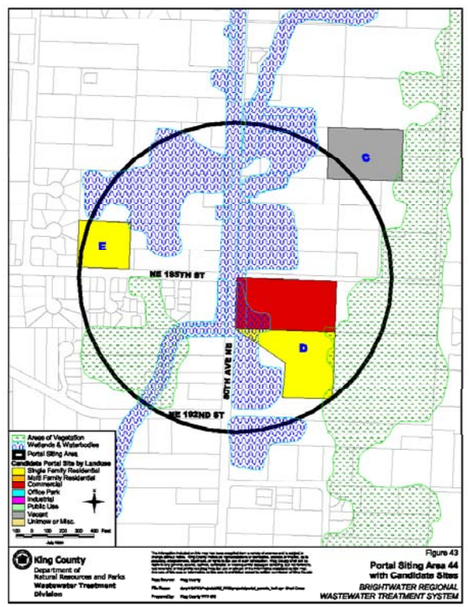
These sites are located within a shallow valley containing extensive wetland areas and streams including Little Swamp Creek. Site I 44-C is a largely undeveloped, shrub-dominated site with scattered deciduous trees. It is located between an extensive wetland that contains two tributaries of Little Swamp Creek and a large mixed forest located on the hillside above the valley. Site I 44-D consists of a horse boarding and training facility with minimal vegetative cover. Portions of emergent and forested wetlands extend onto the site. This site is also adjacent to the large forest discussed above. Site I 44-E is located on an open, grassy field adjacent to a large wetland.

LAND ACQUISITION

Sensitive areas occupy much of the vacant property. Therefore, other open and less densely developed areas are being investigated.

PORTAL AREA AND SITES





PORTAL SITES COMPARISON

Features	Site I 44-C	Site I 44-D	Site I 44-E
Number of Parcels - Number of Owners	1-1	2-1	1-1
Existing Land Use	Vacant (Single-family)	Farm, Single Family (Res. Use/Zone)	Single Family (Res. Use/Zone)
Adjacent Land Use (Approx. number of buildings and dwelling units w/in 400 feet)	8	14	51
Complexity of Relocation	Relative level of complexity in occupant relocations appears to be low (L)	Relative level of complexity in occupant relocations appears to be low (L)	Relative level of complexity in occupant relocations appears to be low (L)
Wetland classification, characteristics, and potential impacts	Potential impact to a small portion of a Category 3 wetland. Likely impact to a shrub buffer.	Impact to a forested and emergent Category 3 wetland. Existing buffer is horse pasture.	Emergent Category 2 wetland located directly north of site. Impacts to degraded, grass-dominated wetland buffer on site.
Forested characteristics and potential impacts	No impact to forest habitat. Adjacent to large, mature forest.	No forest on site. Adjacent to large, mature forest.	None
Stream/buffer characteristics and potential impacts	Construction could impact a potential stream on the site that is tributary to Little Swamp Creek.	Construction could impact a tributary to Little Swamp Creek and wetland buffer at the northwest corner of the site.	Construction would not impact a stream or buffer.
Presence/habitat for special status species	There is no documented presence or potential habitat for special status species on the site.	Potential presence/habitat for special status species associated with Little Swamp Creek and surrounding wetlands including coho salmon and great blue heron.	There is no documented presence or potential habitat for special status species on the site or directly adjacent. Potential presence/habitat for special status species near the site within nearby Little Swamp Creek and surrounding wetlands (see Site E44-D).
Construction/Maintenance Access	Access through private property or residential neighbor with small streets (H)	Access from one direction only (M)	Access from one direction only (M)
Distance to Tunnel Centerline	800	250	200

ROUTE 9 Effluent Conveyance - Portal E45 (195th St Alternative)

Portal Location: Intersection of NE 195th Street and 55th Ave NE
Corridor Segments: Tunnel Access Portal for Segment E44-E45

PORTAL AREA FEATURES

Engineering	
Portal Diameter	50 feet
Purpose	TBM Launch/Receive
Minimum Depth	150 feet
Maximum Depth	250 feet
Candidate Site Size	1.9-3.8 acres
Portal Excavated Volume	5,000 – 23,000 CY
Tunnel Spoils Volume From Portal	52,000 CY
Depth to Groundwater	10 feet
Dewatering Flow Rate	High
Nearest Power Substation	Kenmore
King County Trunk Connection	No
Local System Connection	No
Environmental / Community	
Archaeological Site Probability	High
Range of Number of Parcels Req.	2 to 4
Range of Number of Owners Req.	1 to 4
Drinking Water Wells	No
Length of Activity at Portal	2-4 Years
Site Contamination / Geologic Hazard Potential	Potential for excavation of contaminated soil is limited to surface soil
Area of Wetlands in Area	approx. 0.65
Length of Surface Streams in Area	approx. 1,200
Jurisdiction(s)	Kenmore, Lake Forest Park

EVALUATION OF PORTAL SITES

OVERALL EVALUATION

All the candidate sites are suitable for portal construction. The sites meet engineering requirements. All the sites are located in developed residential area. Site E45-D is likely to have impact on an adjacent stream and forested buffer. Access is considered a major limitation for portal construction at Site E45-A.

ENGINEERING

The sites have land suitable for construction without any slope stability issues. All sites have comparable conveyance lengths. For construction and maintenance access, Sites E45-C and E45-D have access from both directions, while site E45-A requires access through private properties.

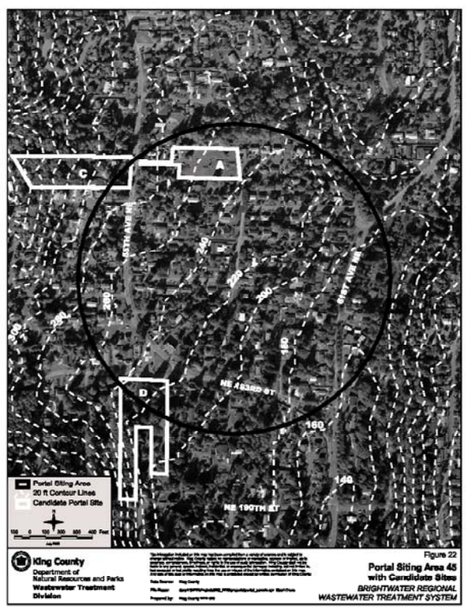
ENVIRONMENTAL / COMMUNITY

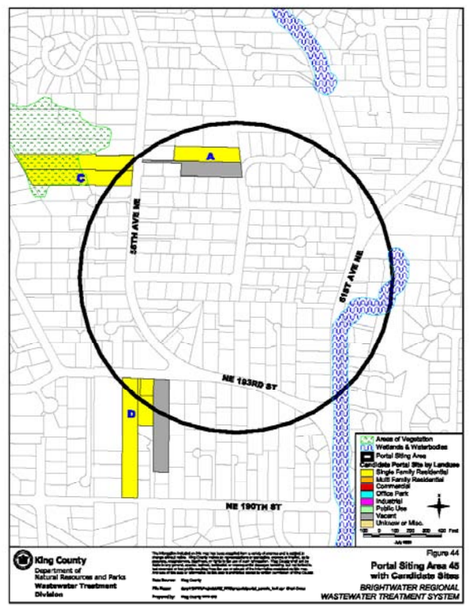
These sites are located in a largely developed residential area. Site E45-A is a low-density residential property covered with grass and small patches of shrubs. Small wetlands and a stream are located immediately north of the property. Small toe-slope wetlands are located on Sites E45-C and E45-D. Site E45-C is composed of residential properties, which are developed at the eastern portion (street side) and adjoin a high quality forested ravine. Site E45-D is composed of residential properties. The west half of the site contains steep slopes with forested wetlands and a stream at the base of the slope.

LAND ACQUISITION

Insufficient vacant property has led to the consideration of large residential parcels in this relatively densely developed area.

PORTAL AREA AND SITES





PORTAL SITES COMPARISON

Features	Site E45-A	Site E45-C	Site E45-D
Number of Parcels - Number of Owners	2-1	2-1	4-4
Existing Land Use	Single Family (Res. Use/Zone), Vacant (Single-family)	Single Family (Res. Use/Zone)	Single Family (Res. Use/Zone), Vacant (Single-family)
Adjacent Land Use (Approx. number of buildings and dwelling units w/in 400 feet)	69	62	74
Complexity of Relocation	Relative level of complexity in occupant relocations appear to be low (L)	Relative level of complexity in occupant relocations appear to be low (L)	Relative level of complexity in occupant relocations appears to be low (L)
Wetland classification, characteristics, and potential impacts	No wetlands on site. Northeast portion of site is a grass buffer for a forested wetland on the site directly north.	Likely impact to a Category 4 scrub/shrub wetland and forested buffer.	Likely impact to a Category 3 forested wetlands and forested buffers.
Forested characteristics and potential impacts	No impact to forest habitat.	Likely impact to mature mixed forest on a steep hillside that covers two-thirds of the site.	Likely impact to mixed forest.
Stream/buffer characteristics and potential impacts	Construction would not impact a stream or stream buffer.	It is unlikely that construction would impact a stream or its buffer.	Likely impact to a small stream and forested buffers.
Presence/habitat for special status species	There is no documented presence or potential habitat for special status species on the site.	Mature forest habitat provides potential habitat for special status species, such as pileated woodpecker and Vaux's swift.	Mature forest habitat provides potential habitat for special status species such as pileated woodpecker and Vaux's swift.
Construction/Maintenance Access	Access through private property or residential neighbor with small streets (H)	Access from both directions (L)	Access from both directions (L)
Distance to Tunnel Centerline	750	700	800